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ORIGINAL ARTICLES

CANCER AND DIVERTICULITIS OF THE LARGE INTESTINE*

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THIS subject sounds like a very formidable and ambitious undertaking. It presents, however, nothing new or startling in the science of surgery of the colon. I have divided my paper into three parts—the first a brief review of cancer of the large intestine, and the second a résumé of diverticulitis of the same; these two together to serve as a vehicle for the third, which consists of a report of a few interesting and unusual cases, each of which teaches a striking and valuable lesson. One or two cases alone are ordinarily not worthy of a report, but a series of several, especially if related to one organ, and if extraordinary, deserves the attention of the profession at large.

To consider first of all carcinoma of the colon, this condition is met with occasionally by every busy practitioner, and must always be borne in mind. Ewing¹ has collected the figures from numerous authors, and finds that cancer of the colon and rectum occur in almost equal frequency, that of the colon being a little more common—the figures from one clinic in Vienna are 164 of the colon to 162 of the rectum—those of Schleich's are 259 of the colon to 257 of the rectum. By the term colon I mean all of the large intestine from the caecum to the recto-sigmoid junction, so it is at once apparent that cancer of the colon is just about equal in frequency to that of the rectum alone. Furthermore, the frequency of cancer increases as one goes from the caecum to the sigmoid, as is evidenced by these figures of 297 cases (Korte):

Cases	
Caecum	47
Ascending colon and hepatic flexure	41
Transverse colon and splenic flexure	75
Descending colon and sigmoid flexure	134

To continue with Ewing's classification, I will briefly state the pathological findings in their order.

1. Ulcerating adenoma.
2. Stenosing fibro-carcinoma.
3. Gelatinous adeno-carcinoma.
4. Polypoid or papillary carcinoma.
5. Multiple carcinomata.
6. Squamous cell carcinoma (usually rectum).
7. Melanotic carcinoma (usually rectum).

*Read before the meeting of the Worcester North District Medical Society, January 28, 1926.

Cancer of the descending colon and sigmoid commonly causes scirrhus contracting growths while that of the caecum and ascending colon does not².

In 150 cases of cancer of the right half of the colon, Rankin and Scholl³, from the Mayo Clinic, report 150 cases, distributed as follows:

Caecum	102
Ascending colon	39
Hepatic flexure	15
Junction of hepatic flexure and transverse colon	3

They found these cases as a rule favorable for operation, and Rankin⁴ in another article states that those of the right half, as far as the middle of the transverse colon, have a much better operative prognosis than those beyond this point.

SYMPTOMS OF CANCER OF THE COLON

Here I will refer to the valuable work of Homans⁵, which I believe summarizes the situation as well as can be done. Considering cancer of various parts of the colon, he classes the most outstanding symptoms as follows:

- a. Right side of colon—
Cramps and pain suggesting acute or sub-acute appendicitis.
Possible anaemia.
- b. Transverse colon—
Cramps or colic, sometimes vomiting.
Varying degrees of constipation.
- c. Descending colon and sigmoid—
Abdominal cramps and constipation.
Constipation ending in obstruction.

In all of these cases there may or may not be a palpable tumor.

The occurrence of blood in the stools seems to increase in frequency as one gets nearer the rectum. In the right half, Rankin and Scholl³ find it inconstant. Drummond⁶ says it is unusual except in cancer of the rectum. Blood is, however, common in cancer of the recto-sigmoid junction⁷.

Diarrhoea, occurring in spells, is not very common in cancer of the colon, though Deaver⁸ states that in cancer of the right half it is more common than constipation.

Diagnosis—The occurrence of indefinite lower

abdominal symptoms, in a person of cancer age, especially with any of the combinations mentioned above, should make one suspicious. And suspicion should always lead to an examination of the stool for blood; and still more important, an x-ray examination after the opaque enema. In the diagnosis of cancer of the colon the enema is much better than the barium meal. Carman⁹ states that 90% of all cases of cancer of the large intestine may be discovered in this way. He further states that the same picture may, though infrequently, be caused by peridiverticulitis; that cancer of the caecum is the hardest of all to diagnose, and that the degree of operability cannot be determined by the x-ray findings. Fischer¹¹ says that with occult blood in the stools and a negative x-ray, the patient should be carefully watched and the x-ray repeated; but that with occult blood in the stools and a suspicious x-ray the patient should be explored.

The operative treatment of these conditions is the only method offering any chance of cure. Radiation, with x-ray or radium, has not as yet been of any help. The operability—that is, the chance of favorable results, in the cases analyzed by Homans, is about as follows:

Caecum	Poor
Ascending colon	Good
Transverse colon	Poor
Descending colon	Good
Sigmoid colon	Fair
Recto-sigmoid junction	Fair

Peck¹⁰ believes that on the whole cancer of the colon is favorable for operation. As mentioned above, Rankin⁷ believes that the right half is the most favorable, but that removal of the transverse colon has a high mortality.

In regard to the operative treatment, there are merely a few words to be said here. Cancer of the right half of the colon, being not usually associated with acute obstruction, may ordinarily be resected at the first operation. The resection is not difficult, and is followed by an anastomosis, either side to side, end to side, or end to end. C. H. Mayo at present is most in favor of the end to side method, using the Murphy button. He follows this by a temporary ileostomy, inserting a small soft rubber catheter (10-12 F) in the ileum about 30-40 cm. above the anastomosis, using the Witzel method. In resections of the right half, the use of wicks is not necessary. In portions of the transverse colon, descending colon or sigmoid flexure, where free delivery of the loop of bowel containing the growth is possible, the Mikulicz operation is the safest. If an operation is done on a cancerous growth involving obstruction, especially where the cancer is on the left side, a preliminary colostomy is necessary. If, in the absence of obstruction, a resection and immediate suture is done on the left side, this suture should be protected by a temporary caecostomy, done by placing a catheter in the caecum, in

the same way that a rubber tube is placed in the stomach in doing a gastrostomy. This catheter is opened to relieve accumulations of gas and liquid faeces, and affords a great safeguard against the distension which might, in its absence, put strain on the lines of suture and cause them to give way. In resections of the left side, drainage by wicks is usually necessary.

In connection with new growths of the colon it becomes necessary to mention a type of lesion only recently recognized, and admirably worked out by Sampson. In brief, he studied and classified a series of tumors, most common in the ovaries, which arise from endometrial cells of the uterus which escape from the fimbriated extremities of the tubes during menstruation, and not only give rise to cysts of the ovary, (the so-called chocolate cysts) but also to growths on other pelvic structures. In a recent report of 64 cases¹² he found these transplants on all the pelvic structures except the bladder and the omentum; they were present on the recto-sigmoid in 11 cases, the ileum and sigmoid in one case, and the caecum in one case. These implants are usually small and harmless, but may increase in size and take on invasive characteristics. They are subject to menstrual changes. They rarely become of enough pathological significance to indicate intestinal resection, and the logical treatment of them, if such radical interference is advisable, is the removal of both ovaries. One of my cases, to be reported below, is of this character.

Diverticulitis of the large intestine is not so uncommon as is ordinarily supposed, and usually occurs in the sigmoid flexure. With advancing age, small pouches develop in the bowel wall, and faecal matter gets into these, but no symptoms are caused unless inflammation occurs. The wall of the pouch may furthermore become very much thinned out, and rupture. In the event of inflammation and rupture the symptoms and signs are practically the same as those of the varying stages of acute appendicitis, save that they are on the left, rather than on right side. Judd and Pollock¹³ report from the Mayo Clinic 118 cases from 1907 to 1924, with a mortality of 10.16%. In a large number of cases which they have reviewed they found the symptoms and signs were as follows:

Pain	80%
Tenderness	60%
Constipation	60%
Tumor	34%
Gas	30%

Frequency of micturition 20%, and in 7 cases fistulae between the bladder and colon.

There is not usually blood in the stools—the Mayo figure is 18%. It is often very hard to make a diagnosis between cancer and diverticulitis, even with the abdomen open, as will be shown in two of my cases. Of course in cancer

there is the progressive wasting, very frequent occurrence of blood in the stools, and 90% positive x-ray findings. In diverticulitis, on the other hand, there is a history of repeated attacks with more or less fever. Gordon-Watson¹⁴ found blood in the stools in 3 of 6 cases of diverticulitis. He emphasizes, among important diagnostic points, a long history of "capriciousness of the bowels," absence of cachexia, the occurrence of attacks, between which the patient is perfectly well, and the fact that in cancer there is usually hardly any pain or tenderness. The x-ray will show up some diverticula, but is not to be depended on in making a diagnosis.

Except in case of perforation and abscess formation, or in a stubborn case with severe symptoms, or in one with a suspicion of cancer, conservative treatment is the best. Resection of the bowel in the presence of this infectious process has a high mortality.

Two very interesting cases have been recently reported by Colby¹⁵ from the Peter Bent Brigham Hospital, in which the patients complained chiefly of bladder disturbance and foul urine, with no gastro-intestinal symptoms. In each of these it was found that a fistula had developed between the bladder and a diverticulum of the sigmoid, and one of the patients was passing gas by the urethra. In each of these a preliminary caecostomy was done, followed in a few days by successful repair of the lesion—in the first case by simple closure, and in the second by resection of the sigmoid.

REPORT OF CASES

The following cases are of interest in illustrating some of the above mentioned conditions, and demonstrate what difficulties may unexpectedly be encountered.

CASE 1. Diverticulitis, circumscribed, of lower sigmoid, mistaken at examination for ovarian tumor, and at operation for cancer.

A woman, 38, was seen in May, 1925. F. H. negative.

P. H.—Four children living and well. During last pregnancy (2½ years ago) had at 6 months a sudden swelling on the left side of the uterus, thought to be a partially strangulated fibroid. This was associated with severe pain lasting 48 hours. The symptoms then subsided, but the patient could not, during the rest of the pregnancy, lie on the left side.

P. I.—Three days before entrance had an attack of dull pain in the left lower abdomen, associated with great soreness, and elevated pulse and temperature. Nausea but no vomiting. Did not know whether she had fever.

No intestinal complications. Bowels regular. No urinary symptoms.

Catamenia—Normal.

At time of examination had no subjective symptoms.

Physical Examination—Negative except as follows: Abdomen—Slightly tender in both lower quadrants, more on left.

Pelvic Examination—Uterus normal in size and position. The fundus could not be very well felt on account of the thick abdominal wall. Behind the

cervix and a little to the left was a small, irregular, exquisitely tender tumor about the size of an English walnut. Nothing else abnormal made out.

This seemed more like an ovary than anything else, and it was thought that the acute attack might have been partial strangulation of the left ovary by twisting of its pedicle. Knowing, however, what she had previously shown during her last pregnancy, it was impossible to rule out a low pedunculated fibroid. Operation was advised.

Operation—May 5, 1925. The uterus was normal in size and position, with a pedunculated fibroid about 3 cm. in diameter arising from the left cornu. There were numerous other tiny fibroids in the wall of the uterus. Left tube and ovary normal. Right tube normal—right ovary slightly enlarged. At the lower end of the sigmoid, below the pelvic brim, was the solid tumor which had been felt by examination, and which was apparently an early carcinoma. It was not adherent to the sacrum, and there was no palpable metastases in the liver. The pathologist was present at the operation, and he agreed that it was doubtless cancer, and radical removal was advised. It was possible to deliver the growth into the wound, and a resection was done without great difficulty, followed by end-to-end anastomosis, after which a No. 20 F soft rubber catheter was sewed into the caecum through a stab-wound. The fibroid was removed, and the wound closed.

The convalescence was uneventful, the catheter coming out on the 13th day, and the catheter opening closed itself within 24 hours thereafter.

Pathological Report—A section of large intestine 7 cm. long. Midway between the cut ends there is a flat lesion in the mucosa 3.5 cm. in greatest diameter. The mucous surface is not ulcerated. The underlying walls are considerably thickened.

Microscopic examination shows diverticula in the mucous membrane, which lead into small focal abscesses in the muscular wall, which are filled with neutrophilic leukocytes, mononuclear wandering cells, and occasional foreign-body giant cells. The muscular walls are partially replaced by young connective tissue and wandering-cell infiltration, and the fat in the mesentery is thickened by fibrosis and wandering cells. There is no evidence of tuberculosis or malignant disease.

Diagnosis—Diverticulitis.

Discussion—This case is that of a small localized area of diverticulitis, low in the sigmoid, presenting a tumor which felt exactly like an ovary, and, with the abdomen open, could not be distinguished from cancer.

CASE 2. Adenomyoma of sigmoid, thought on examination to be ovary, and at operation mistaken for diverticulitis.

Woman, age 40, entered June 24, 1925. This case in my series came directly after the preceding one.

P. H. and P. I.—Two children. Has always been well. During the past few months has had pain and soreness on the left side during menstruation. Otherwise perfectly healthy. Three weeks ago went to her local surgeon, who found on examination what seemed to be an enlarged and tender ovary on the left, and an operation was performed. A hard mass was found, arising in the sigmoid and adherent to the back of the uterus. The surgeon thought this was cancer of the sigmoid and decided not to go ahead with the operation at this time, but closed the wound, and as soon as the patient was able to travel he sent her to the Deaconess Hospital. She now feels well and has no symptoms.

Physical Examination—Negative save as follows: There is a recent median suprapubic scar.

Pelvic Examination—The uterus is normal in size and position. Nothing abnormal felt on the right. On the left, behind and above the cervix, is a firm, hard tumor, about the size of an English walnut, and

rather adherent. At this time it does not feel like an ovary, and it is hard to make out what it is.

X-rays—Negative.

Wassermann—Negative.

Operation advised. Operation June 29, 1925.

Operation—Incision through the old wound. Few light adhesions separated without difficulty. Intestines walled off and uterus pulled up with hook. After separating the adhesions and peeling the growth off the back of the uterus, it was found to be a hard, rather small mass involving the anterior portion of the lower sigmoid, not completely encircling the bowel, and not as large as it felt on pelvic examination. We all agreed that this was probably a localized diverticulitis and decided on resection. The tumor could easily be gotten out. Intestinal clamps were placed above and below, and the tumor excised with about one and one-half inches of bowel on each side. The specimen was examined grossly and was said not to be cancer, but inflammatory. Bleeding points in mesentery tied. End-to-end anastomosis, using double layer of No. 6 c.e.g. Appendix was rather swollen and red; removed without difficulty and stump buried. A rubber tube was then sewed into the caecum through a stab wound in the R. L. Q. One cigarette wick. Wound closed in layers.

Convalescence was uneventful, and patient on leaving the hospital was in excellent condition.

Pathological Report—"On June 29 I received a specimen of sigmoid from your patient. It is 4.5 cm. long. On its outer and anterior surface there is a small, puckered depression lying in the midst of inflammatory membrane. Beneath this is a tumor about the size of an English walnut. The mucosa overlying it is smooth. On its outer surface it is fibrous and glistening, and is not sharply marked off from the surrounding intestinal wall."

Microscopic examination shows a tumor situated in the wall and not extending into the mucous membrane or the submucosa. Its structure is largely composed of interlacing bundles of smooth muscle fibres, in which are scattered islands of small gland tubules, and a small, round cell stroma resembling the normal endometrium. The growth is not malignant. Tumors of this character are commonly found in the uterus.

Diagnosis—Adenomyoma.

Discussion—At the operation this felt just like the tumor in the preceding case, though here again cancer could not be ruled out. It was, however, as the report showed, an entirely different type of lesion, and similar to those described by Sampson.

CASE 3. Cancer of transverse colon, mistaken for tumor of ovary.

Woman, age 66, seen August 5, 1925.

P. H.—Has had six children. Always well.

P. I.—About four months ago had laryngitis, and since then she has never regained her strength. Feels "lifeless," with no ambition. No pain anywhere. Has lost five pounds in last few months.

G. I.—No symptoms. Appetite good. Digestion good. Bowels fairly regular. No marked constipation.

G. U.—Nocturia every two hours. Normal frequency during day. No symptoms. Cta. ceased years ago. Has no complaint whatever—just feels run down and thinks "she is not assimilating her food."

Physical Examination—Rather thin old lady. Blood pressure 110/60. Haemoglobin 55%. All teeth false. Heart and lungs normal.

Abdomen—Negative except that between the umbilicus and the pubis there is a hard, oval, movable mass, which can easily be pushed from the right flank to the left flank, and which is about the size of a large egg, and which is tender to the touch.

Pelvic Examination—The uterus is very small and

senile. The above mentioned mass is easily felt and seems to arise from right ovary.

The opinion was that this was an ovarian tumor, which might or might not be malignant. Operation was advised.

Operation—August 27, 1925. Five-inch suprapubic incision below the umbilicus. The tumor, which felt like a cyst, turned out to be a movable, rather large carcinoma of the transverse colon, lying very low and about three inches in diameter. Nothing felt in the liver. Clamps placed on the bowel on either side about two inches from the growth, which was then removed with a large area of mesentery. The open ends of the bowel brought into the upper end of the wound and left open. Wound closed to this in layers.

The postoperative course was uneventful and on September 11 a second operation was done, at which time the bowel was turned in and the abdominal wound closed. Since then the patient has been perfectly well, although there is a fistula which up to recent date was discharging a very minute amount of faecal matter.

Pathological Examination—"The portion of a large intestine from your patient contains an annular fungating tumor obstructing the lumen."

"Microscopic examination shows 'Adenocarcinoma.'"

Discussion—This presents the case of an elderly woman, with no symptoms, but with a lower abdominal tumor, which, on account of its mobility, and lack of other symptoms, was assumed to be an ovarian origin. A careful examination of the stools, and a barium enema, would probably have enabled us to make a correct diagnosis.

CASE 4. Carcinoma of ascending colon without symptoms.

Woman, age 59, chief complaint is of dizziness and general run-down condition.

P. H.—No serious illness or injury. Essentially negative.

P. I.—Has had dizziness off and on for a year and a half. Has been under care of her own doctor, for chronic nephritis and high blood pressure.

No other symptoms whatever.

Gastro-intestinal—Appetite good. Digestion good. Bowels regular.

Physical Examination—The following positive findings.

Blood pressure 188/104.

Heart—Slightly enlarged—no murmurs.

Abdomen—No tumors or masses. Some resistance in right side over ascending colon.

Urine—Albumin S. P. T. Sugar S. T. Sediment—

Rare wbc, no casts, no blood.

Blood—Hgb. 90%. Smear normal.

Stool—Positive for occult blood.

X-ray report as follows:

"The heart and lungs are negative. Films of the gall-bladder region are not remarkable. On fluoroscopy the stomach is in median position, of a fish hook shape, of good tone and peristalsis. There is no irregularity. Its emptying time is within normal limits. The pylorus and duodenum, with the rest of the small bowel, are not unusual. At 24 hours the large bowel was moderately well filled. A barium enema was given and the large bowel distended. This showed a slight narrowing (ribboned effect) of the sigmoid and distal descending colon. There was a constant irregularity in the mid-ascending colon."

Discussion—There is Roentgen evidence of an old colitis involving the lower descending colon and sigmoid. The irregularity in the mid-ascending colon is, in all probability, the result of a new growth."

Operation—Six-inch right rectus muscle splitting incision. In the ascending colon, just below the hepatic flexure, is a hard nodular growth as large as a plum, movable, with one palpable lymphatic

gland close to it in the mesentery. Removal indicated. The ileum was cut across close to the ileo-caecal valve and the proximal end turned in with a double layer of 0 c.c.g. The caecum, appendix, ascending colon, including the growth, hepatic flexure and two or three inches of the transverse colon were freed up by clamping and cutting the mesentery. The transverse colon at this point was then cut across and the posterior end turned in with a doubler layer of 0 c.c.g. All bleeding points in the mesentery tied. A side-to-side anastomosis was then made between the terminal ileum and the transverse colon in the same method as a gastro-enterostomy is done, with an outer layer of interrupted silk and two inner layers of 0 c.c.g. Wound closed in layers in routine manner. Sponge count O.K. No drain. Patient went back to bed in excellent condition.

Pathological Report—I received a specimen from your patient, consisting of the caecum with the ascending colon, and it is 18 cm. in length.

The appendix hangs free.

At the lower end of the ascending colon there is a circular elevated growth in the mucous surface, which does not encircle the lumen and measures 4x4.5 cm. Its centre is deeply ulcerated.

A microscopic examination shows it composed of irregular gland tubules and solid columns of atypical epithelial cells invading the walls of the gut. There is reactionary fibrosis and small round-cell infiltration.

Diagnosis—Adenocarcinoma.

Discussion—This case is of interest in that there was a rather advanced malignant process in the ascending colon, without any symptoms whatever and with practically a negative examination.

Following the operation the patient's blood pressure promptly dropped to 140.

Seen one year afterwards she was perfectly well.

CASE 5. Inflammatory tumor of terminal ileum and caecum, thought at operation to be malignant.

A married woman of 45 entered the Hospital in December, 1925, with a negative family history.

P. H.—Three children living and well. No miscarriages. Operation for repair of cervix 20 years ago. Otherwise negative.

P. I.—In the summer of 1924 had several attacks of pain around the umbilicus. These attacks then ceased and began again five months before entrance. The pain would start on the left side of the abdomen and then radiate to the right, and at times was severe enough to double her up. The attacks were associated with nausea, vomiting, and gas. There was gradually increasing anorexia, and there had been 20 pounds loss in weight. The patient thought that she had fever with the attacks.

Catamenia—Regular and normal.

Physical Examination—This was essentially negative save for some tenderness in the left broad ligament, a secondary anaemia, and a metabolism of -10.

The gastro-intestinal X-rays, the cholecystogram, and the Wassermann test were all negative.

Operation—Careful exploration revealed the following: There was an indurated tumor involving the terminal inch and a half of the ileum and the adjacent portion of the caecum. A few small mesenteric glands. No metastases felt in liver. This mass did not feel exactly like cancer, and the striking thing about it was that the ileum seemed more involved than the caecum. The terminal six inches of the ileum, and the caecum, with the adjacent glands, were resected, the ends of the bowel turned in, and a lateral anastomosis done.

Recovery uneventful.

Pathological Report—"The caecum and terminal ileum. On section the mucous surface of the caecum is rough, and replaced by small polypoid growths for a distance of 5 cm. from the ileo-caecal valve. The walls are thickened. No enlarged lymph glands. Appendix normal."

Microscopic Examination—"There is wandering cell infiltration and fibrosis. The mucous membrane is in places superficially eroded. No tubercles found. No evidence of carcinoma. The condition is consistent with tuberculosis."

Discussion—The diagnosis in this case might have been suspected, but neither the physical examination nor the laboratory data were of great assistance. In spite of the conclusive report, the probable diagnosis was tuberculosis.

CONCLUSIONS

Five cases are presented showing difficult and unexpected problems in surgery of the large intestine. One must say, in considering these, that the most obvious and probable diagnosis is often the wrong one, and that in opening the abdomen for a supposedly simple lesion one must be ready at any time to meet and to handle something much more serious.

1. In the presence of indefinite gastro-intestinal symptoms in people of cancer age, the X-ray, and the examination of the stools for occult blood, are very important.

2. Exploratory operation is preferable to procrastination.

3. Cancer of the large intestine is, on the whole, favorable for operation.

4. In any case which seems like appendicitis, but in which the symptoms and signs are in the left side, diverticulitis should be suspected. For this conservatism is preferable to radical surgery.

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POSTOPERATIVE MASSIVE ATELECTASIS*

Report of Cases

BY M. F. EADES, M.D.

POSTOPERATIVE massive collapse of the lung was first described by William Pasteur in 1908¹. In subsequent papers he discussed its importance as a postoperative complication. Prior to this time, however, both Pasteur² and Pearson-Irvine³ had described collapse of the lung in cases of postdiphtheritic paralysis.

Cutler and Hunt⁴ have shown that in every 30-50 patients upon whom an operation is performed, one develops some pulmonary complication. The mortality from this cause is approximately .5 per cent. Pasteur⁵ (1914) in a series of 201 postoperative pulmonary complications found massive collapse to rank fourth in frequency. Serlinger⁶ (1921) reported seven cases following 540 consecutive operations. The increase of cases reported in the American literature during the last three years would suggest increased recognition rather than an increased incidence. At present approximately 75 cases exist in the literature, excluding those of traumatic origin.

Massive collapse of the lung as pointed out both by Scott⁷ and Churchill⁸, should be more accurately termed *massive atelectasis*, and is probably only a special manifestation of the same etiologic factors which produce atelectasis under nonoperative conditions. Leopold⁹ has suggested the term "massive collapse with drowned lung," as justified by the increased density of the atelectatic lung by roentgen-ray.

The condition apparently occurs at any operable age. In the literature the ages range from 10 years¹⁰ to 50 years. Both sexes are represented. Of 26 reported cases^{5 9 11 12 13 14 15} in which the sex was noted, 20 were males. The type of anesthetic plays little or no part. Massive atelectasis has occurred following all types of inhalation anesthetics, local (spinal) and without anesthesia at all. The position of the operative field bears a relation to the occurrence of atelectasis, and the side of the operative field a relative but inconstant relation to the side on which the lesion occurs.

Of the 26 cases cited above, 20 followed operations in the lower abdominal quadrants, i. e., appendectomy or repair of hernias. In two instances the pulmonary lesion followed pelvic, in three, upper abdominal, and in one, anal, operative procedures. In 15 of these patients, atelectasis occurred in the right lung, in eight the left lung was involved, and in one the lesion was bilateral. The affected side in the other two cases was not mentioned. The existence of organic pulmonary disease, excepting a

mild bronchitis prior to operation, has not been noted. Presumably secondary influences such as long continued supine position, chilling, and long anesthetic recovery play some part in the occurrence.



FIG. 1. (Case I.) Postoperative Massive Atelectasis. Roentgenogram three days postoperative. Note the displacement of heart and mediastinum to right. The displaced tracheal shadow and the extensive involvement of right lung is well shown.

ONSET

The onset of symptoms is usually sudden, dating any time from the recovery of the anesthetic to six days postoperative¹³. However, there is a latent type of this condition, without marked symptoms, which, Pasteur stated, is largely confined to children.

SYMPTOMS

Attention is called to the atelectasis, either by the appearance of the patient or by the clinical chart. Cyanosis of varying intensity is usually present. The facial expression in marked involvement is distinctly anxious. As Scott⁷ in his excellent report has pointed out, the patient tends to lie on the affected side. Respiratory difficulty is increased by turning the patient on the opposite side. Respirations are short and moderately rapid and may be accompanied by dry cough with steady or intermittent pain over the involved region. A concurrent rise of temperature and pulse is the rule. (See Fig. IV.)

PHYSICAL SIGNS

The affected side of the chest shows absent or much diminished mobility. The intercostal

*From the Third Surgical Service, Boston City Hospital, and the Franklin Hospital, Franklin, N. J.

spaces are decreased in width. Litten's sign is absent. On percussion, dullness to flatness is present over the involved area. As to other signs two different types are described, i. e., those cases with absent or diminished tactile fremitus, vocal resonance, and breath sounds, and those with these signs increased. Rose Bradford¹⁶ believes that following the atelectasis the first group of signs is present and as the lung begins to expand the second group appears. Both case I and II here reported have shown this sequence. The varying physical signs may reasonably be accounted for by either the extent or the degree of atelectasis of the involved lung.

The contralateral chest is hyper-mobile, hyper-sonant, and the breath sounds are distinct.



FIG. II. (Case II.) Condition six hours postoperative. Note the degree of cardiac displacement as compared to the small lung area involved. (Compare with Fig. I.)

In atelectasis of the left lung abnormally high resonance at the left base due to elevation of the left diaphragm is said to be a valuable sign. On the right it is obscured by the area of normal liver dullness.

The cardinal clinical sign is *displacement of the heart toward the affected side*. In involvement of the right lung the cardiac impulse is frequently found at the left border of the sternum. If the left lung is affected the cardiac impulse may be found at the left anterior or mid-axillary line¹⁷. In the few reported cases of bilateral atelectasis no cardiac displacement was noted. Bradford¹⁶ states that the heart is displaced obliquely upward in upper lobe lesions.

The position of the heart should be verified by X-ray in all suspected cases. This is espe-

cially important in the recognition of cases in which the lung involvement and the cardiac displacement is slight. In extensive involvement the affected lung shows a remarkable degree of uniform density by X-ray, comparable in some instances to that of the cardiac shadow. The cardiac displacement is obvious, and in Cases I and III a definite deviation of the trachea toward the affected side was evident. Fluoro-



FIG. III. (Case II.) Second day after operation. The lung lesion has progressed, the heart and mediastinum remain displaced. Note the high right diaphragm which was immobile under the fluoroscope. (Compare with Figs. II and IV.)

scopic examination of Case II showed slight mobility of the thorax on the side of involvement. On forced inspiration no change in the density was noted. The diaphragm on this side was elevated, slightly flattened, and immobile. In the few uninfected operative cases in which the leucocyte count has been recorded, a leucocytosis ranging from 11,000-34,000 was present. Case II showed a leucocytosis of 22,000 on the day following collapse. Stained Blood Smears (Wright's Method) at this time showed no other predominance of cell types or forms. Vital capacity readings were much reduced. (See Fig. IV.)

COURSE

The stage of acute respiratory distress is of variable duration, usually for only a few hours. The cyanosis disappears and the patient is much relieved. Following this the cough may produce considerable quantities of tenacious, yellow, muco-purulent sputum. Elliott and Dingley¹⁸ consider this one of the typical signs. The affected lung usually shows increased voice

and breath signs, with diminished dullness or flatness, and variable presence or absence of all types of rales. This process is generally a gradual one requiring from two to twenty-one days. Scrimger⁶ has reported three cases in which the signs and symptoms terminated suddenly. Leopold⁹ cites a case, in which, as shown by X-ray, there was alternate collapse and recovery on successive days for a period of six days.

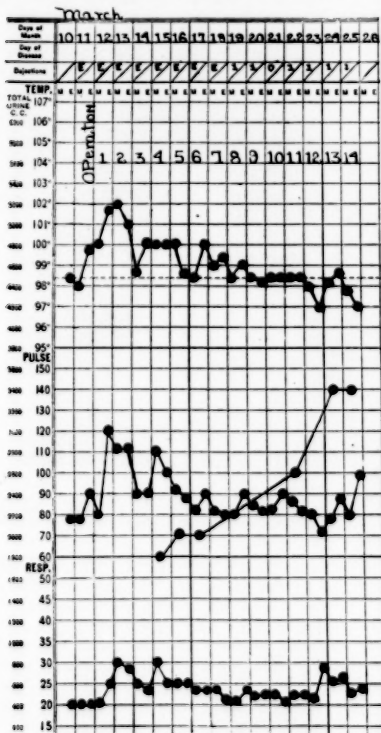


FIG. IV. (Case II.) A typical clinical chart of postoperative massive atelectasis. Note the chart of vital capacity readings indicating the re-expansion of the atelectatic lung.

The heart gradually resumes its normal position in from two to fourteen days. In Cases I and II the order of return to normal as determined by frequent roentgenograms was as follows: (1) heart, (2) lung and thorax, (3) diaphragm.

DIAGNOSIS

The conditions with which massive atelectasis is likely to be confused, are (1) postoperative pneumonia, (2) pulmonary embolism or infarct. From the first differentiation may be difficult because one of these conditions may

complicate the other. (Case III.) Broncho-pneumonia affects the non-collapsed portion of the affected lung^{11 16}. There is no proof that the atelectasis per se predisposes to a pneumonic complication. The cardiac displacement, massive pulmonary involvement, and the course of onset should establish the diagnosis. From embolism or infarct, owing to the varying degrees of signs and symptoms, the X-ray may be the only differential means. In collapse of the left lung acute dilatation of the heart should be considered. The emphysematous condition of the contralateral chest has been confused with pneumothorax. In cases with a previous history of bronchitis, one must consider the possibility

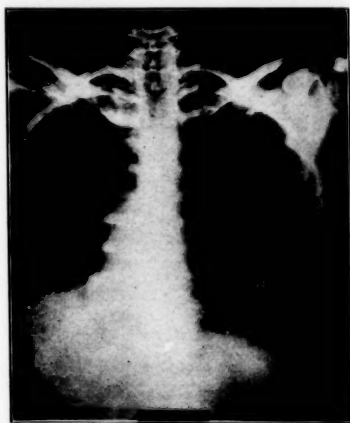


FIG. V. (Case III.) Condition 24 hours postoperative. Right lung involved only at the base but the heart much displaced to the right. Subsequent roentgenograms showed no further involvement until onset of broncho-pneumonia.

of pleurisy with or without effusion. Several cases of massive atelectasis have been reported in which thoracentesis, with negative results, has been performed.

PROGNOSIS

The prognosis in cases of unilateral collapse is excellent. Death is usually due to other factors such as sepsis or extremely poor general condition of the patient. Involvement of more than one lobe or bilateral involvement in debilitated subjects, Hirschhoeck¹² believes, is liable to be fatal. In such a case the above mentioned author described the involved lung tissue as plum colored, depressed in relation to sound lung, airless, and heavier than water. Microscopically the alveoli were collapsed, and contained no blood or purulent material. Lee¹¹ mentions a fatal case in which a plug of purulent mucus blocked a low bronchus. The collapsed lung area was tributary to it.

TREATMENT

No treatment has been found which influences the course. Scott⁷ has used atropin, adrenalin and morphine without specific effect. The patient should be made comfortable by placing in a semi-recumbent position and given sufficient sedative or narcotic to promote rest. After expansion had begun, two of our patients were given the Wolff "blow bottle" frequently used in the postoperative treatment of empyema. We did not ascertain any especial value from this procedure. In cases with complications the treatment is that indicated for the particular complicating factor.

DISCUSSION

Theories regarding the causation of postoperative massive atelectasis may be divided into three groups. (1) Thoracic: the lesion attributed to a diminished movement of the thorax in the affected side whether due to paralytic, infectious, mechanical, or reflex nervous causes, (2) Intrapulmonary: due to bronchial obstruction, inflammation, or vasomotor reactions, (3) Combination of (1) and (2).

Pasteur¹ (1908) on the basis of autopsy findings and former observations on atelectasis following diphtheritic paralysis believed the postoperative phenomenon to be due to a reflex arrest of the diaphragm and the accessory respiratory musculature on the affected side. Bradford¹⁶ designated the diminished mobility of the chest wall as the active factor and of probable "reflex" origin.

Liehtheim¹⁸ (1879) showed that by plugging the bronchi of animals, if the pulmonary circulation was intact, a collapse of the lung tissue tributary to the obstructed bronchus, was produced. Elliott and Dingley¹⁸ (1914) offered the theory that bronchial obstruction and subsequent absorption of the air by the pulmonary circulation gave a satisfactory explanation. Briscoe¹⁹ (1920) after numerous animal experiments concluded that the local pulmonary deflation was due to prolonged supine position. Infection superimposed on this primary deflation he believed caused the atelectasis. Scrimger⁸ (1921) reasoned that the abdominal interference caused, through the vagus, bronchial constriction, subsequent collection of mucus, obstruction, air absorption, and collapse. Churchill⁸ (1925) considered bronchial obstruction and weakened respiratory force as the principal factors in the production of atelectasis. Scott⁷ (1925) believed that "reflex blocking of the finer air passages in the affected lung" of possible vasomotor origin, would explain the mechanism.

Certainly several agencies play a part in the production of postoperative atelectasis. Complete bronchial obstruction alone will unquestionably produce atelectasis. This was shown

experimentally by Liehtheim and has been demonstrated at autopsy in cases of tumor or mucus completely obstructing a bronchial lumen^{11, 12}. If we assume mucus collection in a bronchus to be the cause of obstruction, whether the mucus is due to an inflammatory reaction, or is the result of a bronchial constriction, we cannot explain by these causative factors alone why the reaction is not bilateral. It is possible that the multiple small emboli from the operative field, as suggested by Cutler in the etiology of postoperative pneumonia⁴ (first reference) may be sufficient to produce a reaction of mucus with obstruction in the finer bronchioles. Besides obstruction in the bronchus, infection must also be reckoned as a factor in the etiology of postoperative atelectasis. A rise of temperature has occurred early in the reported cases. In Case II the temperature gradually increased as the collapse progressed. (See Figs. II, III and IV.) The production of the purulent sputum bears out the presence of infection. It has been assumed by Briscoe¹⁹ that the infection is secondary to the stasis and deflation caused by the postoperative supine position.

On the other hand interference with the thoracic musculature whether by posture, trauma, paralysis, or reflex arrest, in the apparent absence of bronchial obstruction, may cause atelectasis. The postdiphtheritic cases of atelectasis of Pasteur¹, the interesting reports of Rose Bradford¹⁷ (second reference) on non-penetrating wounds of the chest and a case of Churchill's⁸ with atelectasis following paralysis of the intercostal muscles convince one that diminished thoracic mobility is an important factor. Furthermore it is difficult to explain by obstruction alone the persistence of the high mobile diaphragm after the heart has assumed its normal position and the lung has cleared.

CONCLUSIONS

- (1) Postoperative massive atelectasis is a frequently unrecognized pulmonary complication.
- (2) The diagnosis is important in order to eliminate more serious conditions with which the condition may be confused.
- (3) It is believed that bronchial obstruction and weakened respiratory movement in varying combinations produce postoperative massive atelectasis.

CASE REPORTS

CASE I. Acute gangrenous appendicitis^{20, 21}.

A sailor, aged 19, entered the Boston City Hospital January 24, 1924, complaining of abdominal pain and dry cough for two weeks. There was moderate dullness at right base. Diffuse coarse rales were heard in both sides of the chest, and a peculiar sensation similar to a friction rub felt over anterior aspect of entire chest. Otherwise findings were normal. The abdomen showed local signs of acute appendicitis. Indefinite mass found in right iliac fossa on rectal examination. Roentgenogram of chest im-

mediately preceding operation showed slight mottling in right upper lung. The temperature was 99.8 F.; the pulse, 100; respirations, 25. A leucocytosis of 20,000 was present.

Nitrous oxid-ether administered for 35 minutes, a ruptured appendix was removed and drainage instituted by Dr. J. B. Shortell.

After 12 hours the temperature, 102 F.; pulse, 120; respirations, 33. Convalescence usual until the second day after operation when the patient complained of pain over the right chest. Dr. P. Davidson recognized the condition as postoperative massive atelectasis and the X-ray verified his physical findings. (See Fig. I.) The patient was moderately dyspnoic, slight cyanosis of the lips and face was present, and the mobility of the right side of the chest was diminished. The entire right side of the chest was dull, more marked over the lower half. Breath sounds were inaudible over the right middle and lower lobes posteriorly, with distant breath sounds at the apex. A few fine rales were heard at the right base. The left lung was hypermobile and the resonance increased throughout. The maximum cardiac impulse seemed just to the left of the left sternal border.

The cyanosis and dyspnoea disappeared on the third day postoperative. At this time the patient began to produce mucopurulent sputum (60 cc. daily). Breath sounds became louder on the fourth day with loud, sonorous breathing at the inferior angle of the right scapula. The right lung was resonant; the temperature, pulse and respirations normal on the eighth day after operation. An hemoptysis (120 cc.) occurred on the tenth day but did not interfere further with convalescence. No tubercle bacilli were found in several sputum examinations. Patient was discharged March 10, 1924, without symptoms. Lungs clear to physical examination.

CASE II. Bilateral inguinal hernia².

A male, aged 28, carpenter, admitted to the hospital March 10, 1924, for repair of bilateral inguinal hernia, gave no history of previous or present respiratory disease. March 11, ether anesthesia was administered for one hour and a bilateral repair made (Bassini method) by Dr. H. H. Howard. Temperature, 98.6 F.; pulse, 80; respirations, 20.

In the afternoon, six hours after the operation, a call from the nurse stated that the patient had suddenly become cyanotic and that his condition was poor. He was perspiring freely and the lips and face very cyanotic. A "rolling" sensation in the right chest was the chief complaint. There was diminished mobility of the right chest and the patient was more comfortable resting on this side.

Dullness was present over the entire right side of the chest with flatness from inferior angle of the scapula downward posteriorly. Breath sounds, tactile and vocal fremitus, were absent over the flat area and diminished over the right apex. The temperature was 100 F.; pulse, 82; respirations, 30. White blood cells, 20,000. (See Fig. V.) The cardiac position was not definitely determined. Left chest hypermobile and hyper-resonant.

The second day (March 13) flatness was present over the entire right chest and the breath sounds inaudible. An occasional paroxysm of coughing produced 120 cc. of mucopurulent sputum during the 24 hours. Temperature, 102 F.; pulse, 110; respirations, 28. (See Fig. IV.) Fluoroscopic study was made with results already noted.

On March 15 the breath sounds were barely audible over the upper one-half of the right chest, anteriorly and posteriorly. Vital capacity reading on this date was 1800 cc. (See Chart.) The temperature and pulse reached normal on the sixth day postoperative (March 17).

The heart was in normal position and the right lung clear to roentgen-ray in 14 days. At this time

fluoroscopic examination showed the right diaphragm to be high and immobile.

The patient was discharged symptom free, the lungs normal, March 29, 1924.

CASE III³. Relaxed Perineum; Retroversion of the Uterus.

A married woman, aged 30, entered the Franklin Hospital March 15, 1925, for repair of old perineal laceration and for uterine suspension. Three days prior to admission the patient had an acute coryza with slight cough. Coarse sibilant rales were present throughout both sides of the chest prior to operation. No roentgenogram was made. The temperature was 98.6 F.; pulse, 85; respirations, 20. The urine was negative.

March 17, under nitrous oxid ether anesthesia of one hour and ten minutes duration, Dr. F. P. Wilbur performed a perineorrhaphy and a uterine suspension (Baldy-Webster method). The anesthetic was well taken and the immediate postoperative recovery uneventful.

At 4 P. M. the nurse reported that the patient was "unable to cough and distressed by phlegm in the throat." The patient was restless, orthopneic, perspiring freely and lying on her right side. Expression was anxious. Face, lips and hands exhibited moderate cyanosis. On account of the extreme distress no extensive examination was attempted. There was flatness over the base of right lung posteriorly and breath sounds were diminished. The temperature was 102.5 F.; the pulse, 140; and the respirations, 40.

The next day (March 18), the cyanosis was more marked. Examination of the chest showed almost complete immobility of the right side. Interspaces were narrowed. Distress and cyanosis increased by turning patient to dorsal position. Dullness was marked at the right base, extending downward from the fifth rib in front and the fourth rib posteriorly. Breath sounds and vocal resonance were diminished over this area. Coarse sibilant rales present over both sides of the chest. Fine crepitant rales were abundant over right apex. Left lung hypermobile and hyper-resonant. No definite cardiac position could be determined by percussion. The temperature was 103 F.; the pulse, 150; and the respirations, 50. The heart and mediastinum were well displaced to the right. But the extent of the atelectasis as shown by roentgen-ray (see Fig. V) was much less than expected from the physical findings. Also the systemic reaction of the patient was greater than in any case previously observed. The pulse at times became very thready and cardiac stimulants were administered freely.

By the fourth day (March 21) the cyanosis and respiratory distress had improved. Copious mucopurulent sputum was produced by paroxysms of cough. A typed specimen of this sputum showed *streptococcus hemolyticus* to be the predominant organism.

The signs did not clear up as in the typical case. The temperature, pulse and respirations, although decreased (temperature, 100 F.; pulse, 110; respirations, 45), continued elevated. On the sixth day (March 23) signs suggestive of broncho-pneumonia were present over the right mid-chest. The X-ray showed no evidence of further involvement.

Gradual uneventful recovery followed. The temperature, pulse and respirations reached normal by lysis on the eleventh day postoperative. At this time the heart had returned to its normal position. Patient discharged March 29, 1925. A roentgenogram of the chest three months later was negative except for two fine transverse bandlike shadows in the right lower chest.

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- 22 Reported through the courtesy of Dr. J. C. Hubbard, Chief of the Third Surgical Service, Boston City Hospital.

STUDIES OF THE VITAMIN POTENCY OF COD LIVER OILS

XX—Effect of Light on the Vitamin A Content of Cod Liver Oil*

BY ARTHUR D. HOLMES AND MADELEINE G. PIGOTT

PREVIOUS to the discovery of vitamins, some cod liver oil manufacturers attempted to improve the color of their product by "sun bleaching." Then, as now, the most desired color for cod liver oil was pale yellow, and it was commonly known that dark yellow or even reddish yellow oils if exposed to the direct sunlight often could be bleached to the desired pale yellow color. To be sure, cod liver oil exposed to direct sunlight, oxidized, acquired a rancid taste and developed a high free fatty acid content. But by treating the "sun bleached" oil with hot alkali, it was possible to reduce or entirely eliminate this undesirable characteristic. Thus the cod liver oil manufacturers of former days could produce a light colored cod liver oil that met the general specifications for medicinal oil.

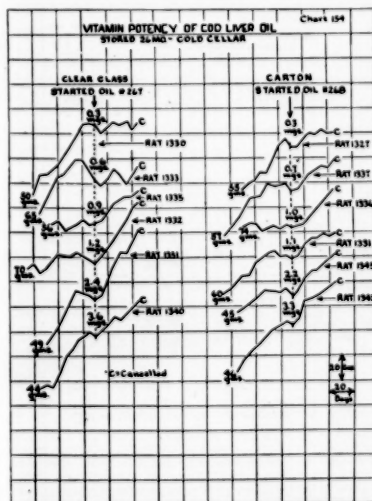
With the passing of the rule-of-thumb methods of manufacture and the substitution of carefully controlled processes, many questions have arisen concerning the ideal procedure for producing cod liver oil of highest possible vitamin potency. As a result of the introduction of modern methods of manufacturing oil and with the insistence on fresh stock, the present day manufacturer has no need for "sun bleaching" or for any other kind of bleaching process. This, however, does not entirely eliminate the necessity for information concerning the possible effect of light on the permanency of the vitamin content of cod liver oil, because cod liver oil is held in storehouses and drug stores in more or less direct sunlight for varying periods of time.

Since all agree that cod liver oil is largely, if not principally, of value on account of its vitamin content, it naturally follows that cod liver oil should be stored so as to most satisfactorily maintain its vitamin content.

*Research Laboratories, the E. L. Patch Company.

The experiments here reported were conducted to secure definite data concerning the extent to which the vitamin content of cod liver oil may be destroyed by storing it in light of different intensities.

The oil which was under investigation was packed in four-ounce "Philadelphia oval" flint bottles. These were filled, stoppered, and sealed

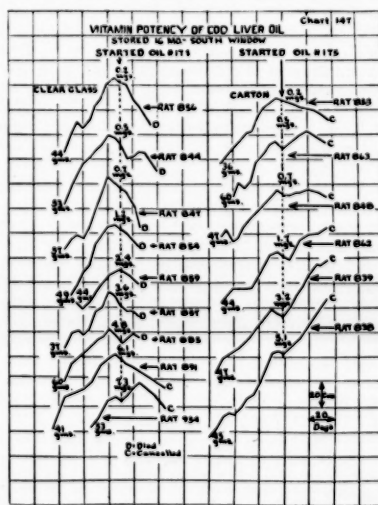
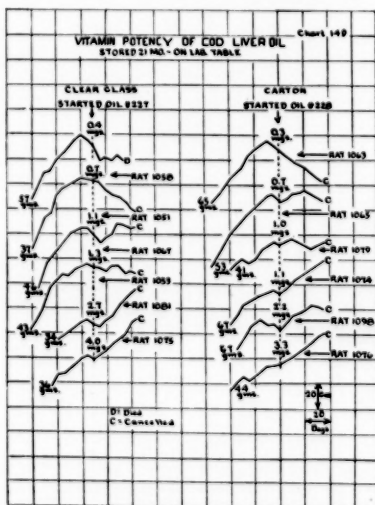
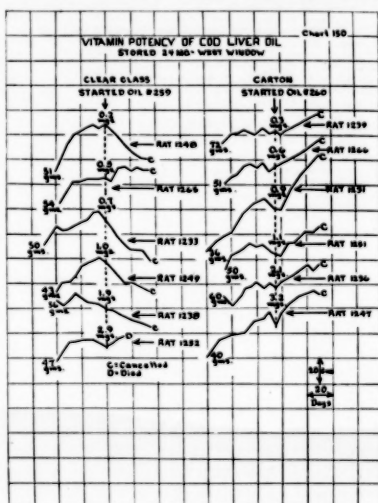
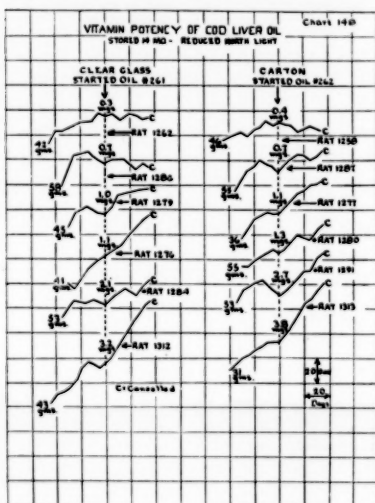


with a viscose capping that rapidly dries to a horny material impervious to air. One-half of the bottles were placed in cardboard cartons which were tightly closed. The bottles of oil, one in a carton and one exposed to the light,

were stored in pairs under a variety of conditions as regards intensity of light. These conditions were as follows:

Oils No. 267 and No. 268 (chart No. 154)

Oils No. 261 and No. 262 (chart No. 148) were stored in a first-story room with north and west exposure. For a portion of summer afternoons direct sunlight entered the room through



were stored in a basement room with west windows, facing a court formed by three-story buildings on the east, south, and west sides. The temperature of the room was between 50 and 60 degrees.

The oil, however, was stored in a glass front cabinet that was never exposed to direct sunlight. Accordingly, the oil received diffused light that had passed through two sets of windows.

Oils No. 227 and No. 228 (chart No. 149) were stored on a laboratory table which at no time was in direct sunlight, but at frequent intervals were subjected to elevated temperatures due to nearby gas burners.

Oils No. 259 and No. 260 (chart No. 150) were stored on the window sill of a west window which was in direct sunlight at all seasons. The possible daily sunshine period varied from a short time in midwinter to nearly the entire day in midsummer.

Oils No. 174 and No. 175 (chart No. 147) were stored on a table located about two feet from a south window. They received direct sunlight during the total hours of sunshine for the sixteen months that the oils were in storage.

The vitamin A potency of oils under consideration was determined by the method which has been described in detail elsewhere¹. Briefly, young albino rats with well developed experimental vitamin A malnutrition were used as experimental animals. In selecting animals for the ten groups assigned to the different samples of oil under consideration, litter mates were included in each of the ten groups. Five or six of these animals were assigned to each of the ten groups. Five or six of these animals were assigned to each of the oils under consideration. During the experimental period they were fed the usual synthetic vitamin A inadequate diet² and the cod liver oil under consideration.

For the sake of ease in comparing the permanency of the vitamin potency of oil stored in the light and in the dark, the growth curves of the animals used to test its potency have been included in the same chart.

Referring to chart No. 154, it will be observed that the experimental animals received amounts of cod liver oil varying from 0.3 milligrams to 3.3 or 3.6 milligrams daily. On comparing the vitamin potency of the oil stored in the dark and that of the same oil unprotected from the action of light, it appears that the subdued light in which these oils were stored did not have any detectable detrimental effect on the vitamin A content.

Referring to chart No. 148, it will be noted that the oil stored in diffused light maintained practically the same vitamin potency whether stored in clear glass or in protected bottles.

On increasing the intensity of the light in which the oil was stored, it was found as noted in chart No. 149 that the permanency of vitamin A potency of oil stored in the wrapped bottles was slightly greater than that of the oil in the unprotected bottle stored under the same conditions.

The results reported in chart No. 150 show the effect on vitamin potency of storing cod liver oil in direct sunlight for a portion of the day. It is very evident from the marked difference in the potency of the oil stored in the

covered bottle and the potency of the oil in the uncovered bottle that sunlight had a decidedly detrimental effect on the vitamin potency of the oil with which it came in contact.

As one considers the results reported in chart No. 147, attention should be directed to the striking difference in the potency of cod liver oil that was stored in the dark as compared with that of oil stored in direct sunlight. Less than two milligrams daily of the oil stored 16 months in the dark was required to cause prompt resumption of growth, whereas three or more times this amount of the same oil stored in sunlight was insufficient for the experimental animals to continue to live. Such evidence shows very definitely that sunlight destroys the vitamin A potency of cod liver oil.

It may be noted here that in all cases light coming in contact with cod liver oil passed through two thicknesses of glass, i. e., the window pane and the bottle, and in one instance, chart No. 148, the light passed through two sets of windows and the bottle. Accordingly, it is evident that the portion of the sun's spectrum which destroys the vitamin A content of cod liver oil is not filtered out by the type of glass used in the manufacture of windows and flint bottles.

From the results reported above, it is evident that during the storage and distribution of cod liver oil, it should be packed in light proof containers, such as amber bottles or flint bottles wrapped in paper or cartons.

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HEALTH DAY

Philadelphia enjoys the distinction of being the only large city in the country which annually observes a Public Health Day, the purpose of which is to arouse interest in personal and community health. Since its inception ten years ago, Dr. James Auders—an authority—has been chairman, and through his influence co-operation of the various health and civic organizations has been established in observing this annual health day.

Health talks are given in the schools. Radio talks as well as wide publicity to the importance of health conservation is the program of the day. The College of Physicians take charge of the program and assign the speakers.

How about Health Day in our own city?—*The Queen's Hospital Bulletin.*

The Massachusetts Medical Society

THE CONTROL OF THE COMMUNICABLE DISEASES PREVALENT IN MASSACHUSETTS*

With a Study of the Mortality Due to Them During the Past
Seventy-Five Years

BY EDWARD G. HUBER, M.D.

(Continued from page 225)

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VI. THE COMMUNICABLE DISEASES OF MASSACHUSETTS

In the ensuing pages those diseases which are reportable in Massachusetts are given more or less complete individual discussions in two re-

worth while. It is fully realized that registration of deaths gives an imperfect picture of the actual morbidity, unless case fatality is 100% as in rabies. It is not possible to assume any fixed ratio between morbidity and mortality, based on case fatality, for the latter differs much in different epidemics and localities. Such diseases as mumps, chicken pox, and German measles which are never fatal afford as yet no reliable information as to their prevalence. Good morbidity figures are highly preferable to mortality statistics but in the absence of the former, the latter have received as much attention as possible. Massachusetts has always been a leader in its registration reports, which go back as far as 1842. Up to

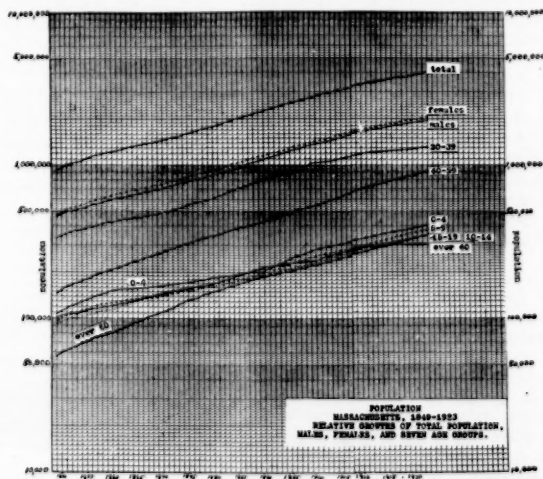


FIGURE 1

spects, namely; first as to the most practicable and useful control measures in the light of recent knowledge; and second, as to the mortality rates in Massachusetts during the last three-fourths of a century. The statistical study has been made for each disease which has had sufficient deaths due to it to make the figures

1849, however, not all the counties of the state submitted complete reports. In 1860 registration of deaths before interment was required. Mortality statistics for the past seventy-five years are therefore being given, with a full realization that the figures are probably much better for the last twenty-five than for the first or second periods. It is probably safe to say that the figures for the three periods are poor,

*Published by the Committee on Public Health of the Massachusetts Medical Society.

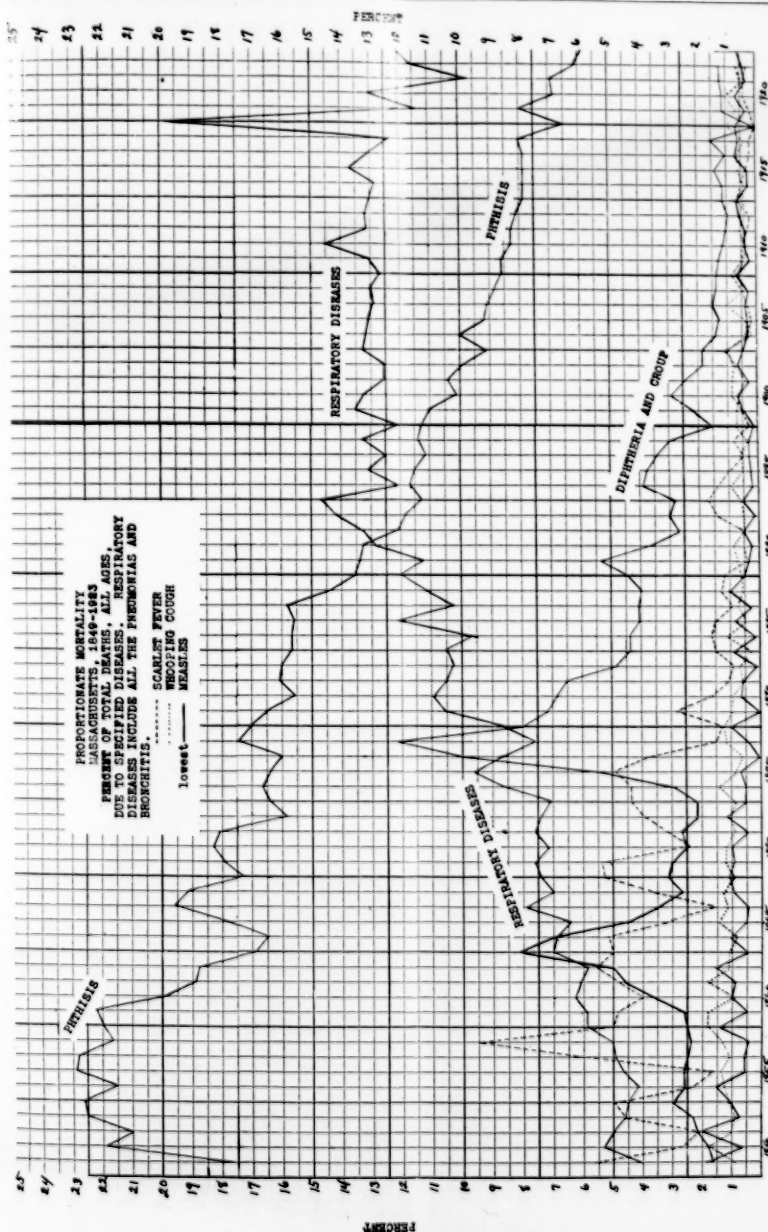


FIGURE 2

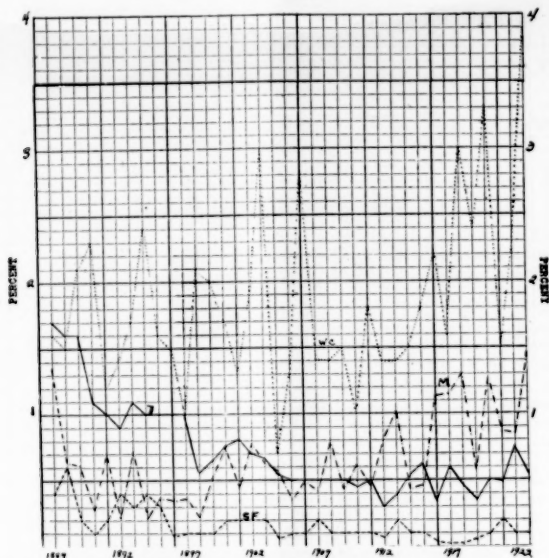


FIGURE 3
PROPORTIONATE MORTALITY
MASSACHUSETTS, 1887-1923
Age Group under 1
..... scarlet fever
----- measles
———— diphtheria and croup
- · - · - whooping cough

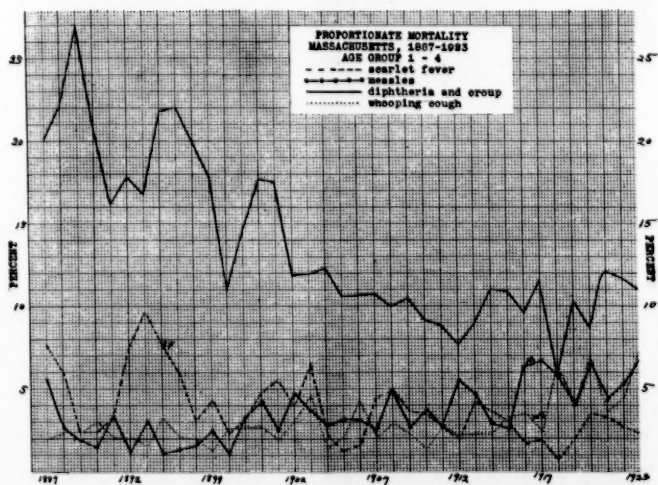


FIGURE 4

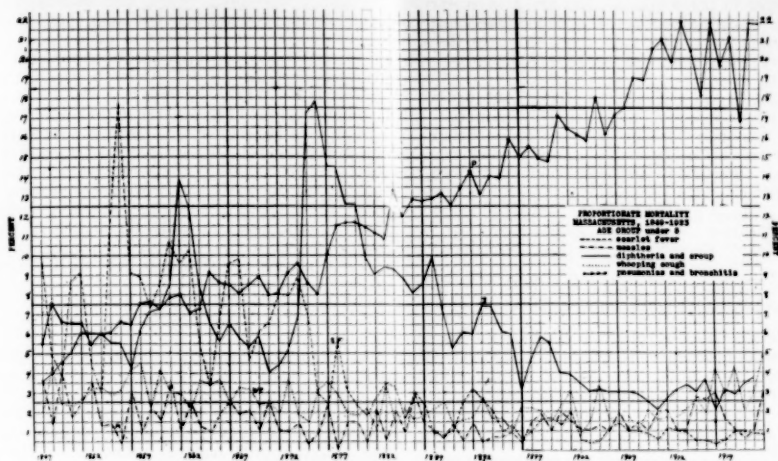


FIGURE 5

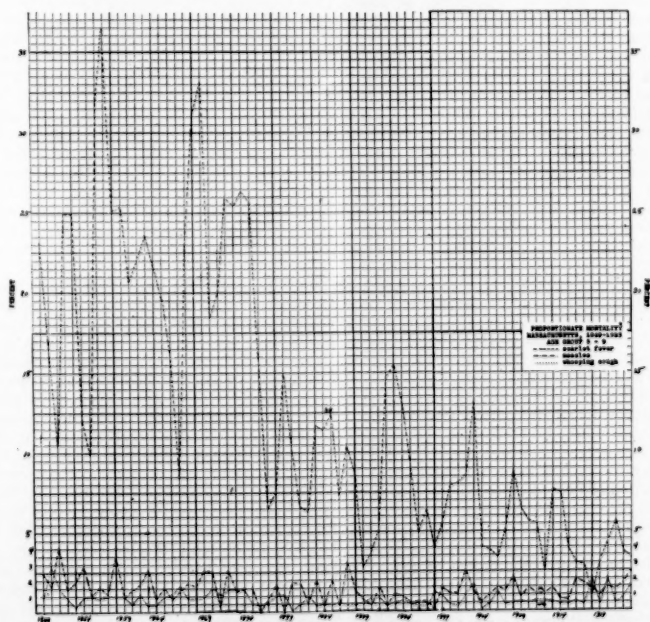


FIGURE 6

fair, and good, respectively, yet there are none better in the country. The age groups selected for study have not always been those most desirable for such a study, but owing to the way they were given in the reports there was but little choice.

As to the clinical accuracy of the causes of death as reported, there are grave doubts. But at least there are probably no large systematic errors. The following are the chief reasons why mortality statistics are not entirely reliable:

1. Incorrect diagnoses.
2. Changing classifications of disease.
3. Failure to ascribe death to the real cause, when complications exist.
4. Failure to make a diagnosis before death, and autopsy not permitted.
5. Intentional concealment of real cause of death.

R. C. Cabot studied three thousand hospital clinical diagnoses at autopsy. Medical diagnoses made under the best of conditions were correct in the following percentages:

Typhoid	92%
Lobar pneumonia	74
Bronchopneumonia	33
Active phthisis	59

In the acute infectious diseases and tuberculosis death certification may usually be accepted as not very inaccurate. Measles and whooping cough may be considered as exceptions and deaths due to them are often returned as bronchopneumonia.

In computing rates the population data obtained from the federal censuses 1850-1920 were used. The rate of increase of the population of Massachusetts is shown in figure 1. The only marked departures from a straight line are in age groups under five and 20-39, both of which are probably due to census errors. The increase in age groups over twenty has been greater than in those under that age. Figure 1 is exhibited because it shows the populations on which the rates were computed. The systematic error is undoubtedly large, considerably exceeding the probable error in several age groups, notably infants and age 20-39. Mortality rates from such data over a short period would be of little value, but the period studied is of sufficient length so that some few general conclusions can be drawn.

Figures 2-6 show proportionate mortality in Massachusetts, during the period studied, for a few of the most important diseases, for all ages as well as for several age groups. Until 1887 deaths under five years were not subdivided by years, consequently graphs for age groups under one and one to four extend back to 1887 only. Figure 2 shows the decrease in pulmonary tuberculosis for all ages from being the cause of 22% of all deaths to the present figure of 6%. On the other hand, the pneumonias and bronchitis increased from 4% to about 13%, having remained at about that figure since the early nineties. Scarlet fever and diphtheria have de-

creased, the latter several years behind the former. Whooping cough and measles have also decreased relatively but they have never been large factors in the list of causes of death. Figures 3-6 show proportionate mortalities at age groups under 1, 1-4, under 5, and 5-9 respectively. Whooping cough is the leader at age under 1 and diphtheria at all other ages except for the respiratory diseases shown only for age under 5. At age 5-9 scarlet fever has been of enormous importance in years past but now causes but a slightly greater proportion of total deaths than measles or whooping cough. The proportionate mortality for diphtheria, age 5-9, is shown in figure 54 and considerably exceeds even the high figures for scarlet fever shown in figure 6.

1. THE PNEUMONIAS

In all probability Hippocrates recognized as a clinical entity what we now regard as a fairly large group of closely related diseases,—the pneumonias. As is the case with most other diseases, its history from ancient times until late in the Middle Ages is unknown. During the sixteenth and seventeenth centuries there were widespread epidemics of respiratory diseases which may well have been forms of pneumonia, the characteristics of which, however, differed from the forms seen now. In modern times the disease has been endemic throughout the world, until 1918 when it again partook, to some extent of its old epidemic characteristics. It has since become endemic once more.

In Massachusetts, until 1901, the only reported causes of death in this group were "pneumonia" and "bronchitis." The former was "inflammation of the lungs" from 1842-1844. In 1901 the pneumonias were divided into bronchopneumonia and lobar pneumonia, and in 1912 pneumonia undefined was added. Figure 7 shows the crude mortality rates for bronchitis from 1849-1922. In 1901, deaths from this cause began to be reported under two diagnoses,—acute and chronic, but the two are here included under the one term bronchitis. There were wide fluctuations in the rates until 1861, when a definite increase began which reached its height in 1892 with a rate of 80 per hundred thousand. Since then the decline has been at the same rate as the preceding increase, with practically no more disturbance in 1918 than occurred in 1900, 1907, and 1910. After each of these peaks there was a temporarily sharp decline similar to the 1921 drop. This decline has been more rapid than in the ten original registration states from 1900 to 1920 as shown by Tomanek and Wilson, where the rate was cut in two or better. In Massachusetts, in 1900, the rate was about 55; in 1922, about 11. It is rather difficult to attempt to say just what was the actual cause of death where bronchitis was the official cause. One of the early Mas-

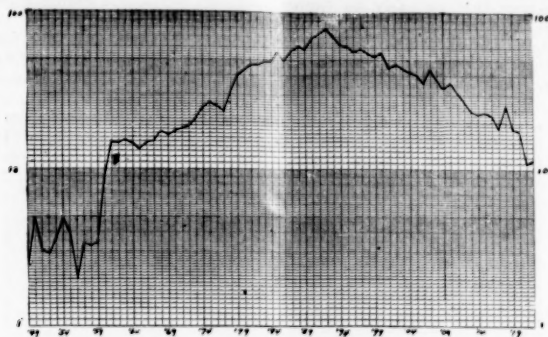


FIGURE 7
BRONCHITIS
MASSACHUSETTS, 1849-1922
Crude Mortality Rates per 100,000

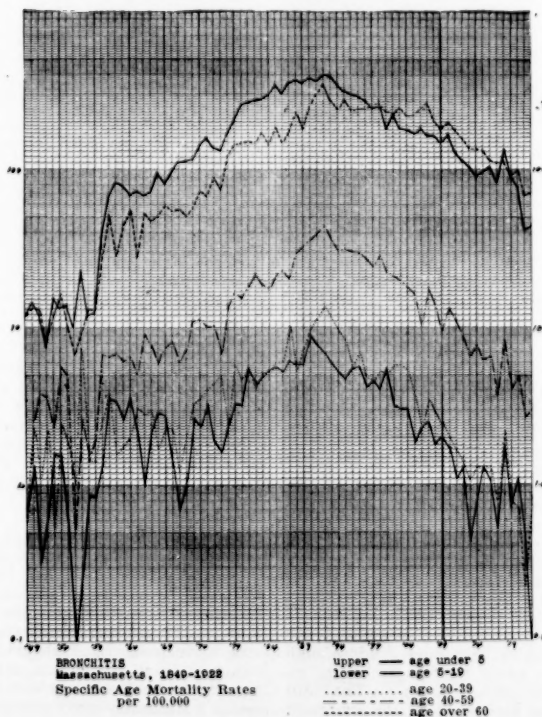


FIGURE 8

sachusetts registration reports comments on this point, remarking that probably no doctor ever saw a death due to bronchitis alone. In figure 8 the distribution of deaths from bronchitis by age groups is shown. In general, the rate for each age group follows the crude rate

that year age groups under 5, and 40-59 show moderate peaks, and groups 5-10 and 20-30 show marked disturbances.

Figure 9 shows the rate for "pneumonia" through 1900, and, from 1901, that for lobar pneumonia. The broken line from 1901 gives,

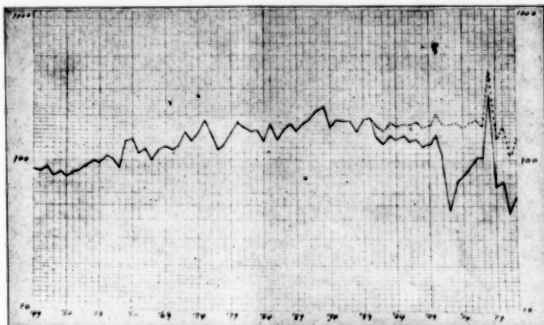


FIGURE 9
PNEUMONIAS
MASSACHUSETTS, 1849-1922
Crude Mortality Rates per 100,000

Continuous line shows rates for pneumonia until 1901, when the different forms of pneumonia began to be reported. From 1901 to 1922 this line shows lobar pneumonia. The broken line includes all the pneumonias.

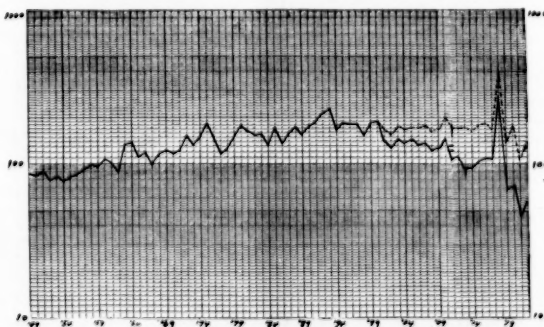


FIGURE 10
PNEUMONIAS
MASSACHUSETTS, 1849-1922
Crude Mortality Rates per 100,000

Continuous line shows rates for pneumonia until 1901, when the different forms of pneumonia began to be reported. From 1901 to 1922 this line shows lobar pneumonia plus pneumonia undefined. The broken line includes all the pneumonias

for all ages rather closely. Ages between five and sixty have shown declines somewhat greater than the rate for all ages; and children under five have had a more rapidly declining rate than that for the oldest group. The latter rate has been the highest of all the age groups since 1900, and showed no peak in 1918. In

for comparison, the rates for all the pneumonias. The general trend from 1849 to 1900 was to increase from about 90 to twice that figure. If all the pneumonias are considered together as they were before 1901, the rate remains a stationary one except for the 1918 peak and the succeeding rapid decline. In the ten

original registration states the rate for all forms of pneumonia has shown a slight but steady decline. The 1922 rate in Massachusetts was higher than that for 1921, and there is a fair probability that the rate of 170 to 180 maintained since 1894 will be reached again. There has been no increase or decrease in the pneumonias in the last thirty years in Massachusetts, but the various terms introduced for diagnostic purposes which subdivide the group

sensibly smoothed thereby, but it retains its downward trend.

Pneumonia (1849-1900) and lobar pneumonia (1901-1922) are shown in figure 11, distributed among the age groups. The rates are highest at ages under five and over 60. There was no noticeable rise in the rates for these two age groups in 1918 such as there was at other ages (particularly 5-19 and 20-39) but in all other respects the trends of the rates for the

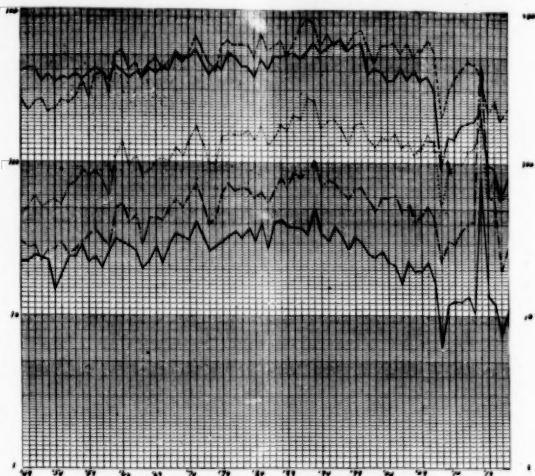


FIGURE 11
PNEUMONIA AND LOBAR PNEUMONIA
MASSACHUSETTS, 1849-1922
Specific Age Mortality Rates per 100,000
upper ————— age under 5
lower - - - - - age 5-19
 age 20-39
 - age 40-59
 - - - - - age over 60

make for confusion in the mortality reports when the different subdivisions are studied by themselves over short periods of time. The rate for lobar pneumonia since 1901 shows at first a sharp drop, then a rise beginning in 1913, culminating in the 1918 peak, with a succeeding sharp decline. Such changes must be studied in their relations to the other members of the group.

Figure 10 is similar to figure 9 except that the continuous line after 1901 which in figure 9 indicated lobar pneumonia alone, is here increased by pneumonia undefined. The latter became an official diagnosis in 1912 in which the lobar pneumonia rate reached a low level. As pneumonia undefined decreases, lobar pneumonia increases, so it does not seem illogical to consider them together as was done in figure 10. The lobar pneumonia curve is seen to be con-

different age groups do not differ materially. The drop in 1912 was due to the fact that pneumonia undefined was a popular diagnosis rather than lobar pneumonia. The crude rate for all ages, as well as that for each age group has shown a noticeable decline from 1893 to date. In this respect Massachusetts differs from the ten original registration states where this rate has increased, especially in the age group 20-39.

Pneumonia was first allowed to be officially reported as "undefined" in 1912. The rate for that year was about 65, but declined steadily until 1919 except for the slight increase in 1918. It has apparently reached a level of a little over two per hundred thousand. The distribution by age groups (fig. 12) is the same as for the other pneumonias, the same groups also having the marked increases in 1918. Figure 13 shows the crude rate for all ages.

Bronchopneumonia shows a rapid rate of increase from 1901 when it was first an official cause of death, until 1913. The 1922 rate was about the same as that for 1913, and it seems to have been about stationary during that period except for a moderately high peak in the curve in 1918. The same ages as in the other pneu-

in the rate since 1913 has not been so rapid as before that year.

When we come to a study of figure 14, which shows the rate for all the pneumonias and bronchitis, we see a uniform rate of increase until 1893 and then a much slower but perceptibly constant rate of decline until 1917. The 1918

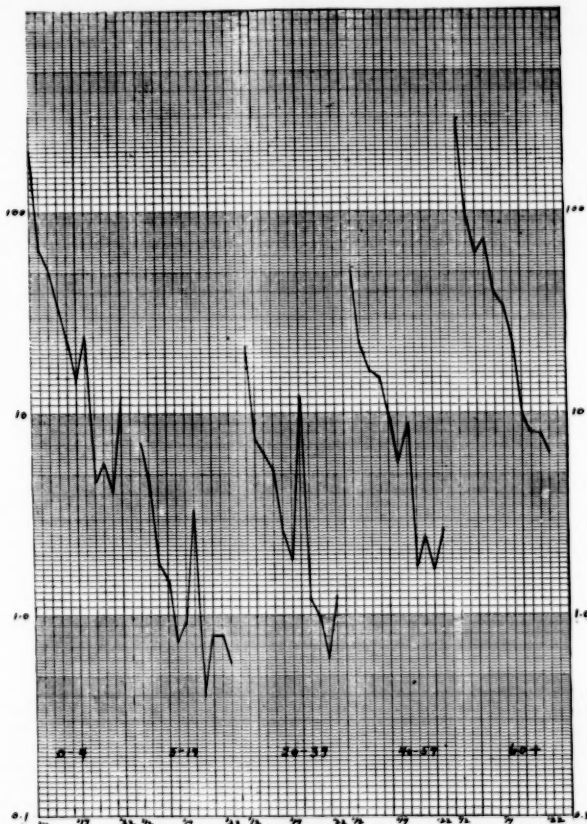


FIGURE 12
PNEUMONIA UNDEFINED
MASSACHUSETTS, 1912-1922
Specific Age Mortality Rates per 100,000

monias have the highest rates and the same ones were most disturbed in 1918 (fig. 13). However, the age group under five is the only one that has a stationary or decreasing rate since 1913. In all the other ages there has been a constant trend toward an increased rate ever since 1901. This was also true of age under five until 1913. At age over sixty the increase

peak is a marked one, and since then the curve has not come to equilibrium but shows signs of doing so within a year or two.

Taking these figures as a whole it is difficult either to say that the pneumonias are increasing or that they are decreasing. The slight indicated decline in the rate may be due to trends in diagnosis. Pneumonia terminates many

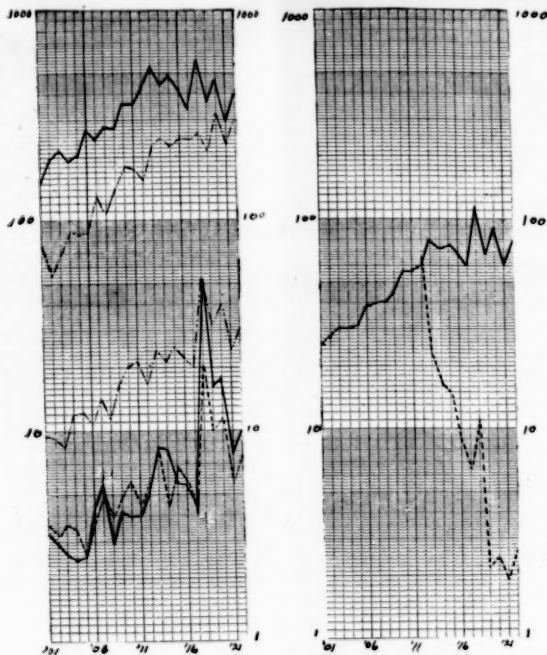


FIGURE 13

BRONCHOPNEUMONIA
Specific Age Mortality Rates
per 100,000

upper ————— age under 5
lower ————— age 20-29
----- age 5-19
----- age 40-59
----- age over 60

BRONCHOPNEUMONIA
and
PNEUMONIA UNDEFINED
Crude Mortality Rates
per 100,000

————— bronchopneumonia
----- pneumonia undefined

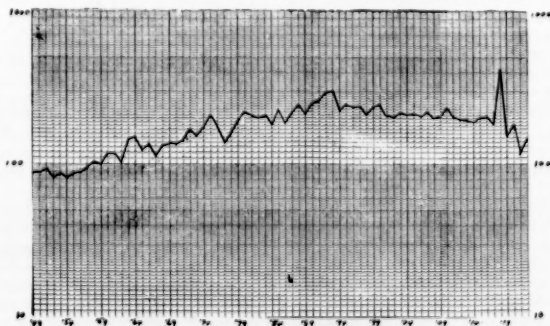


FIGURE 14

PNEUMONIAS AND BRONCHITIS
MASSACHUSETTS, 1914-1922
Crude Mortality Rates per 100,000

diseases and there may be an increasing tendency to ascribe the cause of death to the original disease rather than to the complication. Organic disease of the heart is increasing as a reported cause of death. Its diagnosis has improved in efficiency in the last few years and this has probably tended to increase the cardiac rate while decreasing that for pneumonia. In the same way a popular diagnosis like organic disease of the heart, which is constantly placed before the public in health propaganda, probably now has a tendency to receive prefer-

TABLE B
Age Distribution of Deaths from Bronchopneumonia
in Massachusetts
1901-1922

Age group	Deaths	Per cent. of total deaths
Under 5	25,935	58
5-19	1,235	3
20-39	2,216	5
40-59	3,490	8
Over 60	11,509	26
Total	44,385	100

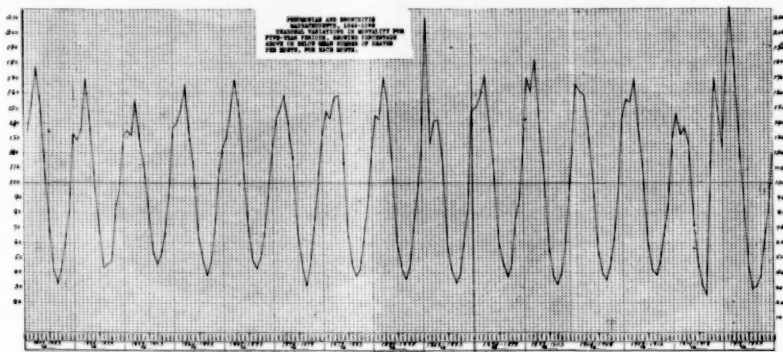


FIGURE 15

ence over a diagnosis of pneumonia if there is any doubt as to which is primary. Both these tendencies would have the effect of decreasing the pneumonia rate and of increasing that for the heart group. Altogether it looks as if the respiratory diseases were at a standstill as far as mortality is concerned, in Massachusetts. This means morbidity also, probably, for there has been no improvement in therapeutics which has had a marked effect on the fatality of pneumonia as a whole.

Figure 15 shows the seasonal distribution of the pneumonias and bronchitis since 1849. The peak has almost always occurred in March and the low point in August. During a few quinquennia the peak was reached in January or February.

TABLE 1

TABLE A
Age Distribution of Deaths from Bronchitis in
Massachusetts
1849-1922

Age group	Deaths	Per cent. of total deaths
Under 5	27,629	49+
5-19	1,248	2+
20-39	2,201	4
40-59	4,650	8+
Over 60	20,139	36+
Total	55,867	100

TABLE C

Age Distribution of Deaths from Pneumonia, Lobar
Pneumonia, and Pneumonia Undefined,
in Massachusetts

1849-1922

Age group	Deaths	Per cent. of total deaths
Under 5	63,145	29
5-19	11,815	5
20-39	35,438	16
40-59	43,097	20
Over 60	66,067	30
Total	219,562	100

Table 1, A. B. and C, and table 2 show the age and sex distribution in this group of diseases.

TABLE 2

RESPIRATORY DISEASES, MASSACHUSETTS, 1849-1922

Pneumonia and Lobar Pneumonia, 1849-1922

Total deaths	214,396
Male deaths	111,579
Female deaths	102,787
Sex unknown	30

Bronchopneumonia, 1901-1922

Total deaths	44,429
Male deaths	22,365
Female deaths	22,064

Pneumonia Undefined, 1912-1922	
Total deaths	5,506
Male deaths	2,014
Female deaths	2,592
Bronchitis, 1849-1922	
Total deaths	55,935
Male deaths	26,078
Female deaths	29,857
Pneumonias and Bronchitis	
Total deaths	320,266
Male deaths	162,936
Female deaths	157,300

It is seen that the mortality increases with age over five, is greatest in the two extremes of life, and is greater among males except that more females than males are reported to have died of bronchitis.

Figure 16 shows the proportionate mortality by age groups for the pneumonias and bronchitis. There was a gradual increase from 1849 to 1895 for all the groups, but ever since that time all ages have shown a slight decrease except for the groups under five which continued to increase as before.

The pneumonia group has always been perplexing from a diagnostic standpoint, possibly to some extent because of changes in terminology. This has been doubly true since the influenza pandemic. One of the members of the group, lobar pneumonia, is now a notifiable disease in many communities. When typical it resembles clinically the other infectious diseases, but it is often atypical. Bronchopneumonia and bronchitis, on the other hand never have such a typical course. So the differential diagnosis between the members of the group is often difficult to make, especially since the same organism may be the cause of any disease in the group. And when the fact is recognized that lobar pneumonia and bronchopneumonia are not infrequently found together, the diagnostic distinction is more difficult still. Bronchopneumonia is also occasionally seen in primary epidemics, as in 1917; at this time however the causative organism was generally the streptococcus. Even with typical cases distinction between lobar and lobular pneumonia is difficult, and it would therefore seem more logical to classify the pneumonias according to the causative organism rather than by so vague a distinction as clinical symptoms and objective signs, if classification is necessary. From a statistical standpoint the less subclassification the better.

The modern conception of pneumonia dates back only to 1913 when Dochez and Gillespie showed that diplococcus pneumoniae, which was the cause of over 90% of lobar pneumonias (454 out of 529 cases reported by Avery), and which had been regarded as a single organism, was really a group made up of several serologic types. It then became evident that lobar pneumonia was not a distinct disease but a group of diseases, very closely related, however. This

discovery also indirectly upset the old ideas of the etiology of the disease. Pneumococci had often been found in normal mouths and it was believed that an individual who harbored the organisms and whose resistance was lowered in some way, became a victim of the organism whose host he was. But unfortunately for this theory Stillman showed that the serologic types of pneumococci most commonly causing pneumonia were rarely found in the saliva of non-contacts, and vice versa. He also showed that 12% of contacts and convalescents became carriers and persisted so for weeks or months, and that pneumococci could be found in the dust of the sickroom. Avery et al found that about 64% of cases and 62% of deaths from lobar pneumonia were caused by types I and II. These workers also found only one type I or II in the saliva of 297 healthy non-contacts; but 12% of those in contact with type I or II cases had the respective organism in the saliva. Type IV is the one most commonly found in non-contacts and this type causes the fewest and mildest cases. Among colored troops at Camp Funston this state of affairs was reversed, for those of them who contracted lobar pneumonia had types IV, III, and atypical II. There were only a few type I and no II. In 1918, Opie says, the lobar pneumonia following influenza was found to be almost all these same types.

Pneumonia is, strictly speaking, an endemic disease. The occasions when the disease has become strikingly epidemic are so few and so conspicuous that every writer on the subject calls attention to the epidemics in the cantonments, on the Canal Zone, and in South Africa. Minor epidemics in camps, schools, prisons, and on shipboard occur occasionally. Overcrowding is the factor common to all such outbreaks. The disease is found everywhere in the temperate zones and in the plateaus of the tropics. As a general rule, where the population is densest, the morbidity and mortality are greatest.

Before the differentiation of lobar pneumonia into types, no immunity was recognized. It is now known that there is a short-lived immunity, for a year or two only, but exclusively against the type which caused the infection. When convalescents have recurrences the cause is almost always a different type probably received by contact with a case of the latter type in an adjacent bed. The fact that almost all carriers of pneumococci have type IV may have something to do with the mildness of infections due to it, when they occur. The observation that the victims of pneumonia on the Canal Zone who were recent arrivals from the West Indies where pneumonia was a rare disease may also be significant in considering immunity, for they were very susceptible. In the cantonments, the men from the south where pneumonia is not so prevalent, suffered more than their comrades from the north.

The exact manner of transmission of pneumonia is not known. The infecting organism

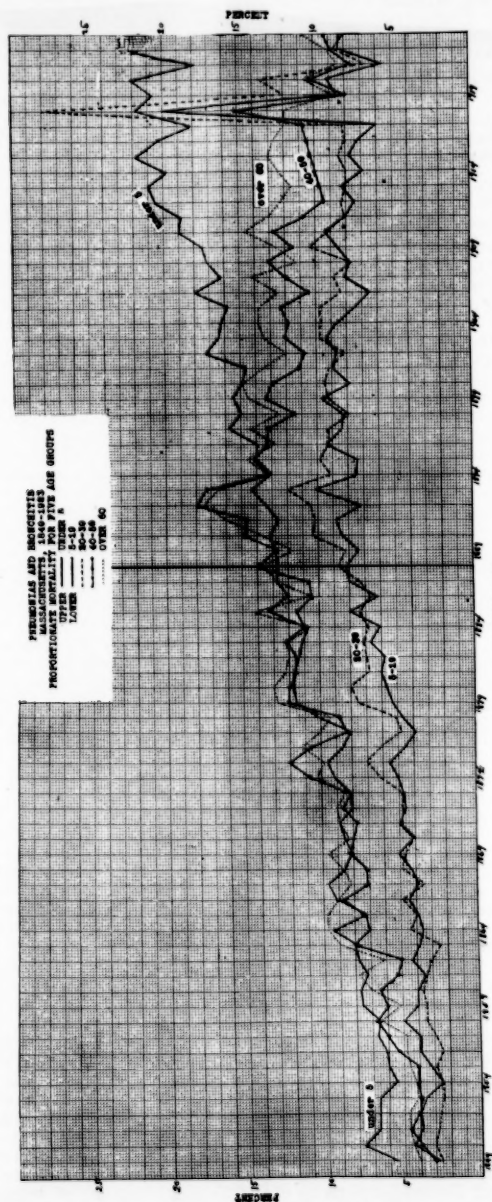


FIGURE 16

exists in the sputum of the patient. Experiments of Blake and Cecil have shown that in monkeys the disease is bronchiogenic and not hematogenous. Intratracheal, and not subcutaneous or intravenous injections produced the disease in those animals. We therefore assume that transmission takes place in one or more of the thousand ways in which saliva gets from one person to another. Yet an infection in a nurse or attendant of a case is comparatively rare, although these persons frequently become carriers. Wherever epidemics have occurred, overcrowding has been a prominent factor. Pneumonia is the one acute infectious disease where debilitating conditions are thought to predispose. A common cold, measles, whooping cough, and influenza also predispose in some way at present unknown. It was especially disastrous in the cantonment hospitals to keep a measles case with pneumonia as a complication, in a measles ward. The uncomplicated cases of measles seemed to have as marked a susceptibility for pneumonia as they had had for the original infection.

No progress has yet been made in controlling pneumonia except in some epidemics where overcrowding was replaced by ample space per man. But against pneumonia as it exists today, in endemic form, the health officer is helpless. The lobar group has been made reportable and a few cities have made strenuous but fruitless efforts to control the disease. Close contact of individuals with one another such as takes place in public gatherings and conveyances probably is the greatest factor in transmission. Droplet infection seems to be the actual manner of spread and this cannot be prevented. In the light of present knowledge, a prophylactic vaccine which will give active immunity seems to be the hope of the student of preventive medicine.

Isolation of the patient together with concurrent disinfection has some value, for although very few of the patient's attendants contract the disease, yet it is an excellent plan to keep children and the aged away from the sick, for those ages show the highest mortality. Isolation in epidemics has undoubtedly value.

The reservoir of the virus is probably in the unknown carriers who must be relatively few since very few carriers of types I and II have been found. The other conditions necessary for transmission are unknown.

The most important step in attempts to control pneumonia is educational. The public should be given the benefit of all the facts and the known dangers should be carefully explained. As anyone may be a carrier, the common ways of transferring saliva and the dangers therefrom must be made matters of common knowledge and must be avoided before there can be any control.

Notification of cases of lobar pneumonia as a general practice is of questionable value. The

diagnosis is, in the first place, very uncertain. Unless the health department plans some special anti-lobar pneumonia campaign and needs to know all the cases for the special experimental plans in mind, it is difficult to see what value notification could be. The statistician is interested in morbidity, and a start must be made, however imperfect; but there is no denying that the morbidity figures for lobar pneumonia are of very slight value, largely because of difficulties in diagnosis and terminology, and also because a local pneumoniaphobia may influence the diagnosis. It would seem preferable to have notification required for the entire group of pneumonias as a whole, without attempts to subclassification. There is no valid logical reason for making lobar pneumonia alone notifiable unless the health department is able to take preventive steps against that particular form of pneumonia which give more promise than mere isolation of the victim.

(To be continued)

EMERGENCY SURGICAL OPERATIONS IN TRANSIT

It is reported that Dr. Jean Bouchon, formerly assistant to Dr. Doyen, a young French Surgeon who acquired valuable experience in the world war, has been inspired to invent mechanical devices which will enable a surgeon to perform operations on trains, airplanes and other moving conveyances.

The system is called "Fixo-Decapage" and consists of a series of instruments so constructed that a surgeon can operate without assistants. He has already tested his method and the mechanical devices, and will submit a demonstration to other surgeons who will accompany him in an aeroplane.

The claim is made that by the application of this system serious operative cases can be treated immediately as soon as the surgeon reaches the patient, thereby eliminating dangerous delays.

Dr. Bouchon believes that many lives now lost can be saved by a surgeon with this equipment. The greatest usefulness of this system would be under war conditions.

Further details will be interesting.

ARSENIC IN APPLES

In a report of a study of the amount of arsenic found on Canadian sprayed apples, Dr. F. T. Shutt, Dominion Chemist, is quoted in *The Lancet* to the effect that the maximum amount of arsenic on forty-three samples of apples examined showed that one would have to eat three pounds of apples at a time in order to ingest the minimum medicinal dose of arsenic.

This, according to *The Lancet*, disposes of the prejudice of the buyer or consumer of apples.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY

RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 12311

A CASE OF CHRONIC LUNG TROUBLE

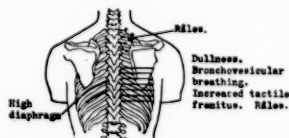
MEDICAL DEPARTMENT

An elevator man twenty-four years old entered February 17 complaining of lung trouble of seven months' duration. When he was eight years old he dislocated his right hip. It was not reduced. He was treated for four months in a hospital. Before admission his right leg was much shorter than the left. The foot was brought down without operation. He had had a compound Colles fracture of the right arm. For the past year his appetite had been very poor. For a year he had had joint pains in the right hip. He smoked two packages of cigarettes a day until the past month, when he had not smoked at all.

The July before admission he got wet and worked in wet clothes. A week or two after this he began to have cough with whitish sputum. This persisted all summer with remissions of two or three days. The first of August he began to have drenching night sweats. During the first week he had these every night. Since that time he had had about two every week until a week before admission. During the past week he had had only one. Immediately after the onset of these he began to have increasing weakness and dyspnea on exertion, until now both were very marked. The first of October he vomited after breakfast for about two weeks and had one loose movement every day. He took four bottles of cough medicine without relief. About this time his sputum began to have a slightly yellowish tint. He stopped work at this time, as he felt exhausted. His weight had dropped from 140 pounds in April to 113. He remained in about the same condition until Christmas. Then he got his feet wet. Two days later his cough became worse, but was unproductive. He also began to have aching pains starting in the region of the lower ribs on both sides, slowly progressing upward toward the axilla and extending over both shoulders. These pains were aggravated if he lifted even a chair. The pains were not constant. When he did not have actual pain a soreness would remain. This continued until three weeks before admission.

Three weeks before admission he had chilly sensations up and down his back all the time, but no actual chills. Two weeks before admission his cough became worse and he felt dizzy and extremely weak. A physician told him that he had "congestion of the lungs" and that his hip trouble was weakening him, and gave him some tablets for his heart because it was too rapid. At times he had palpitation on exertion. After he had taken two bottles of a proprietary medicine for his cough it disappeared. Since Christmas his appetite had been better than it was during the summer. Some days he ate a great deal, other days little. Since the onset he had had bitemporal headaches two or three times a week. For the past three days these headaches had been constant, dull during the day and stabbing toward night. Since September he had slept only two or three hours a night. Since October he had lost four pounds.

Examination showed a pale, emaciated young man, not acutely ill. There were several carious teeth and pyorrhea. The spine showed slight scoliosis and was quite rigid, with a suggestion of kyphosis in the dorsal region. The heart was normal. The blood pressure was 115/60 to 140/80. The lung signs were as shown in the diagram. There were râles after cough over



practically the entire right chest behind. Resonance was impaired in both chests practically throughout. The abdomen was rather rigid and difficult to examine. There was no tenderness. The right femur was practically fixed in about sixty degrees flexion. The only motility was about ten degrees in the antero-posterior plane. The entire right leg was very much shortened and internally rotated.

The urine was normal in amount, cloudy at one of two examinations, specific gravity 1.022 to 1.032, a very slight trace of albumin once. The sediment showed two or three leucocytes per high power field at both examinations. Blood examination showed 11,800 to 13,300 leucocytes, 80 per cent. polynuclears, hemoglobin 80 per cent., reds 4,432,000, platelets slightly decreased; otherwise the smear was normal. A Wassermann was negative. The stools were negative.

X-ray. Both lung fields showed diffuse mottling with areas of increased density. The changes involved the lung fields from the hilus to the periphery and from the apex to the base. There were several linear areas of increased density in the right midchest which suggested

areas of fibrosis or localized pleural thickening. The diaphragm was low on both sides. The costophrenic angles were clear. The cardiac shadow was somewhat prominent in the region of the left auricle. There was scoliosis of the dorsolumbar spine with rotation of the bodies of the vertebrae. The intervertebral spaces appeared to be maintained. There was an old destructive process involving the right hip joint, with marked destruction of the acetabulum and the head of the femur. There was upward displacement of the shaft of the femur and atrophy of the entire right side of the pelvis.

The temperature was 98° to 102.2°, the pulse 62 to 110, the respiration 22 to 48.

The day after admission the patient had a slight headache. February 20 lumbar puncture was done with withdrawal of 15 c.c. of slightly yellowish clear fluid, initial pressure 350, pulse and respiration normal, jugular compression 450, jugular release 350, pressure after withdrawal of 5 c.c. 200, after withdrawal of 10 c.c. 140, 15 c.c. 100; cells, 101 leucocytes, 3 per cent. polynuclears, 97 per cent. lymphocytes, sugar 23 mgm., plasma sugar 122 mgm., alcohol and ammonium sulphate strongly positive, total protein 178, Wassermann negative, goldsol 0000011121, chlorides 646, plasma chloride 546.

February 23 the patient had aphasia and right hemiplegia. The next day he died.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

Lung trouble of seven months' duration in a man of twenty-four is more apt to be tuberculosis than anything else.

There is a possibility that the diagnosis of dislocation in the right hip was a mistake and that tuberculosis of the hip was the actual disease. This should be easily ascertainable through X-ray and direct physical examination.

The fact that his appetite has been poor for a year, that is for at least five months previous to the other symptoms suggesting lung trouble, is what one would expect if the trouble turns out to be tuberculosis.

It is not probable that his rather excessive smoking has any important connection with the present trouble, or that the wetting of the previous July was of any importance.

Presumably his fever began to be considerable about a month after his cough started and at the period when night sweats first made their appearance.

Dyspnea and weakness are symptoms which might well go with the diagnosis already mentioned. The same is true of his vomiting and his bowel trouble. The loss of weight is of course quite to be expected.

On the other hand, the pains in the chest and

shoulders, while not in any way incompatible with pulmonary tuberculosis, are not what one would expect.

Up to the beginning of the physical examination, then, we have the symptoms of some infectious process, presumably of the septic type, and accompanied by a persistent cough. We are right in thinking first of tuberculosis because that is the commonest cause of such a fever and such a septic process, especially at this man's age. We must not forget, however, that malignant endocarditis or other forms of sepsis might produce most if not all of the same symptoms.

NOTES ON THE PHYSICAL EXAMINATION

In the physical examination our attention is naturally concentrated upon the signs shown in the diagram of the lungs. If the râles shown at the top of the right lung are constant, and if there are none elsewhere, the suggestion of tuberculosis would be still further strengthened. The signs at the right base might be due to an area of solidification in the lung itself, or to fluid outside it; also to abscess or to malignant disease, though we have nothing in the history to suggest either of these. If it is true that percussion resonance was impaired throughout both lungs the process must be very extensive either in the lung or in the pleura. Pleural adhesions are perhaps the most probable cause of this sign.

The reports from the blood and urine do not help us. So that we come to the X-ray report hoping for something to confirm or upset the diagnosis suggested by all the signs thus far, namely pulmonary tuberculosis, especially marked in the right lung. And in fact the report of the X-ray examination is consistent with this, though it is surprising, because apparently both lungs are involved from top to bottom, and there is little to suggest that the trouble is any worse on the right than on the left. If the process were of the miliary type it would be strange that he has lived as long as he has since the beginning of symptoms. If it were due to malignant disease one would not expect it to be so widespread throughout both lungs, and would expect some evidence of a primary focus in another organ. His occupation and previous history give us no reason to suspect pneumoconiosis. And though chronic nontuberculous pneumonia can give such a picture it is unlikely to show such signs after so long a period of illness. The X-ray makes it quite clear that there is no fluid in either chest, and that the signs obtained clinically at the right base must therefore be due to disease in the lung itself.

Very important evidence comes to light with the X-ray report on the right hip joint. So far as I understand it it points to a tuberculous process and not to the dislocation supposed to

have taken place in childhood. This might be the old focus from which a miliary process had spread into both lungs.

After the patient enters the hospital a new chapter of the case opens. The examination of the spinal fluid points to a chronic meningitis, and as we know that tuberculous meningitis is very apt to be associated with signs such as have already been described in the hip and the lungs, that diagnosis seems justified.

DIFFERENTIAL DIAGNOSIS

The clinical diagnosis therefore is of old tuberculous of the right hip joint, bilateral pulmonary tuberculosis at a stage somewhat between the miliary and the caseous, but probably without much cavity formation and probably associated with caseous tuberculous of the bronchial lymphatic glands, tuberculous meningitis, and in all probability, general miliary tuberculosis of the other organs.

BACTERIOLOGICAL REPORT

Sputum showed many tubercle bacilli in every field at both of two examinations.

X-RAY INTERPRETATIONS

The changes in the lung fields are those of a profuse process which is characteristic of miliary tuberculosis. There may be an old process in the right upper chest. The findings in the right hip suggest an old tuberculous process.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Miliary tuberculosis.
Tuberculous meningitis.
Tuberculosis of the right hip.
Pulmonary tuberculosis.

DR. RICHARD C. CABOT'S DIAGNOSIS

Old tuberculosis of the right hip.
Bilateral pulmonary tuberculosis.
Tuberculosis of the bronchial lymph glands.
Tuberculous meningitis.
General miliary tuberculosis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Tuberculosis of the lungs with cavity formation.
Miliary tuberculosis of the lungs, liver, spleen and kidneys.
Tuberculous meningitis.

3. *Historical landmarks*

Chronic pleuritis.

DR. RICHARDSON: Head. The pia was wet. At the base the pia, extending from the medulla up along the pons, out the fissures of Sylvius and between the frontal lobes, was thickened,

reddened and dotted over here and there with tubercle-like granulations. The brain weighed 1230 grams and on section was negative. On section the vertebrae were negative.

Trunk. There was some shortening of the right lower extremity, with ankylosis of the right hip. This is stated to have followed an old dislocation. There was no evidence of tuberculosis. The skin generally was pale to pale bluish white. The muscles were thin and pale. The subcutaneous tissues were dry.

The right pleural cavity was moist. The left was obliterated by old adhesions. Pleural adhesions: Right, at apex and upper lobe, elsewhere free. Left lung bound down by old adhesions.

The trachea and bronchi contained much dirty brownish-red semifluid purulent material. The bronchial glands were slightly enlarged, pigmented, and showed slight fibrosis in places. No definite tubercles were made out.

The right lung was voluminous. The tissue generally was dark red and sanded with tubercles. In the upper part of the upper lobe there were several typical tuberculous cavities, the largest four centimeters across. In the upper part of the lower lobe there was another similar cavity four centimeters across. In the apical region there were several areas of pigmented fibrosis and fibrocaseous material. The left lung was voluminous. At the apex there were a few pigmented fibrous and fibrocaseous areas and in this region there were a few small cavities. The tissue of this lung was sanded with tubercles. The bronchi leading to the large cavities showed moderate dilatation and contained much purulent material.

The liver weighed 1396 grams. On section the tissue showed tubercles here and there.

The spleen weighed 230 grams. The tissue was dark brown red, a little mushy, and the section surfaces showed tubercles here and there.

The kidneys combined weighed 280 grams. The surfaces showed scattered over them many tubercles and there were many tubercles scattered through the substance.

A case of tuberculosis of the lungs with cavity formation, miliary tuberculosis of the lungs, liver, spleen and kidneys, and tuberculous meningitis.

CASE 12312

DIFFERENTIAL DIAGNOSIS IN A CASE INVOLVING THE SHOULDER JOINT

NEUROLOGICAL DEPARTMENT

A man of forty-five was referred by Dr. Arthur W. Allen May 20, 1925. He complained of the left shoulder. He first noticed a year and a half ago that he could not raise his arm above his head. There was no pain and the condition

did not seem to change. Osteopathy was tried. X-rays were negative at another hospital, so he took no treatment for a year. When a yellow stain began to show on the back of his left shoulder he went to his doctor. Use of the arm was about the same as previously. He volunteered no other complaints.

Direct questioning brought out the fact that there was some numbness and prickling of the

right. The ocular muscles were normal; there was no nystagmus. Both pupils reacted well to light, accommodation and consensually. The fundi were probably normal. The disc seemed a little pink, but there was no true optic neuritis. Fifth, seventh, eighth and eleventh nerves normal. The hearing was acute in each ear. Palatal reflex was normal. The tongue protruded straight, without tremor or atrophy. Co-



Shows an extensive process involving the head of the humerus, the glenoid, and the tip of the acromial process. The process is destructive. There are many large, loose fragments of bone apparently free within the joint capsule. There is no bone atrophy. The soft tissues are considerably thickened.

left hand. There were no sharp pains anywhere, no sensory dissociation, no swelling, but he stated that ten years ago he had a swollen left arm, cause unknown. There was no weakness of the arm, except the shoulder. There was no unsteadiness or tremor. The legs showed no symptoms, either sensory or motor. There was some imperative micturition. No symptoms referable to eyes or ears. The gastro-intestinal tract was negative, but his bowels were somewhat constipated. His best weight was 215 pounds. His present weight was 192 pounds. There had been no recent change. Fifteen years ago he had diphtheria antitoxin near each shoulder blade. He had open sores on his back at that time. He denied specific disease.

Examination showed the left pupil slightly smaller than the right. There was a question as to whether the left lid slit was smaller than the

ordination of arms was good and strength of the arms good and equal. There was no atrophy. Triceps, wrist and radial periosteal jerks absent. There was a slight reaction on striking the supinator longus muscle; it was the same on both sides. Left shoulder joint flail. Sensation over arms and hands normal to touch, prick, cold and vibration sense. The gait was normal. He stood with the slightest possible swaying in the Romberg position. Legs and thighs showed no atrophy. Sensation was normal. The knee and Achilles jerks were equal and lively. Plantar reflexes were normal. The abdominal reflex was not obtained on either side. There was a scar of an old appendix operation. Cremasteric reflexes were present.

The spinal fluid showed pressure 190 mm., dynamic studies normal, protein normal (40 milligrams per 100 cubic centimeters), globulin

absent (ammonium sulphate test), one cell per cubic millimeter, goldsol 0011121000, Wassermann negative. Blood Wassermann previously negative.

X-ray plates of the cervical and upper dorsal spine showed very slight proliferative changes about the margins of the articulating surfaces of the lower vertebrae. Plates of the shoulder showed an extensive process involving the head of the humerus, the glenoid, and the tip of the acromial process. The process was destructive, and there were many large, loose fragments of bone apparently free within the joint capsule. There was no bone atrophy. The soft tissues were considerably thickened.

On May 22, 1925, the patient was seen again. The right pupil was very slightly greater than the left. Both were circular and reacted to daylight and electric light, but the right was not quite perfect to these tests. Both pupils reacted consensually.

On January 4, 1926, he had done nothing about his arm since May. On December 16 he noticed some blood on the sleeve of his undershirt and on looking for the cause found a red oozing area at the left elbow. There was absolutely no sensation to call attention to it. This area had since scabbed over under treatment with simple ointment followed by antiphlogistine. The lesion did not suppurate and did not spread. At no time was there any sensation in connection with it. Otherwise the patient was entirely well. Occasionally he had prickling in the fingers as previously and he thought he could perceive temperature as well as ever with his hands. There was no change in the disability of the left arm, which disability was confined to the left shoulder, chiefly elevation of the same. There were no symptoms referable to the legs. He had occasional imperative micturition, as previously. He remembered now that he fell from a motorcycle some thirteen years ago and fell on his left side.

Examination showed his weight to be 201 pounds. His color was ruddy. The pupils were as before. There was no prominence of either eyeball. The arms showed almost no abnormality, at rest, of the left shoulder, it being hardly more prominent than the right. All movements were performed by the left arm except elevation from the horizontal position upward, and all other movements were of good and equal strength with the right. Evidently the head of the left humerus was not in its socket at all, or it slipped out with extreme ease. There was no tenderness on pressure over the left shoulder. Over the elbow joint on the extensor side there was a black eschar closely adherent to the underlying skin, thickened and reddish in color. There was absolutely no tenderness on pressure however, no evidence of infection, and no evidence of fluid formation. The triceps and radial jerks were equal and slightly sluggish on

both sides. There was no atrophy of the muscles. No weakness of any group of muscles was seen. No fibrillation was noted. Sensation over arms, shoulders, chest, abdomen and legs to cotton wool and tuning fork was normal. Needle prick was felt normally for the most part, but occasionally he did not tell the head from the point of the needle over either left or right arm, but more often the left was wrong. Cold and hot test tubes were mistaken more than half of the time over the whole left arm, including the neck and shoulder regions. Over the right arm he occasionally confused hot and cold. Elsewhere over the body he was accurate and prompt in his answers. Station and gait were normal. Knee and Achilles jerks were equal and very lively. Plantar reflexes normal. No ankle clonus. Abdominal reflexes not obtained.

X-rays taken on December 28 showed the left shoulder joint almost the same as in April last. The right was normal.

On January 12, 1926, the patient returned at my request for reexamination as to sensation. The findings were similar to those of January 4, namely, both warm and cool test tubes poorly perceived over the left neck, shoulder, upper and lower arm, over the shoulder blade and the left upper chest. Mistakes were also made over the lower chest and over the upper abdomen. Sensation on the face was almost normal. The needle prick was less well perceived over the territory under discussion than elsewhere, but light touch, cotton wool, vibration sense, were normal. The triceps and radial periosteal jerks were not obtained on that side. The knee-jerks were lively. There was no evidence of atrophy in either arm, and no weakness over the arm or hand was detected. As usual, the right pupil was larger than the left, and one could imagine that the left palpebral fissure was smaller than the right.

Dr. Allen had removed the eschar from the elbow. The wound was clean. The edges were well rounded and did not show evidence of healing.

DISCUSSION

BY JAMES B. AYER, M.D.

The points brought out in this case are few but it seems to me striking. We have a history which is a simple one. The patient complains only of his left shoulder and cannot be induced to admit other symptoms. Also, the past history is a simple one, with injection of diphtheria antitoxin and resultant abscesses between the shoulder blades as the most striking complications.

The examinations carried out on the first occasion and seven months later are interesting for comparison. Unequal pupils if examined correctly mean something, provided the findings

are constant and the examination carefully made, with the light affecting both eyes equally. They usually mean some disturbance of the sympathetic innervation of the eye. His was not an Argyll-Robertson pupil.

The left shoulder joint is of course of most interest. It was not only flail but was a little swollen, and yet the impression was not obtained that there was fluid in the joint. There was marked crepitus on moving the shoulder joint, but no tenderness or pain was elicited. There was no sense of heat. The rest of the neurological examination is negative with the exception of absent abdominal reflexes, a negative finding of no reliable import in a stout person such as this was.

This case was referred to me with the idea that it was *tubercles*, and I believe that any of you who will look at the X-ray findings of the shoulder joint will agree that a Charcot degeneration of the shoulder joint was evident from the X-ray, as from the clinical description just given. In spite of negative examination and absent history suggesting *tubercles* we examined blood and fluid, which were entirely negative, with the exception of a reaction to gold chloride. The reaction obtained might be styled a *luetie* zone type, but a *luetie* zone goldsol test does not necessarily signify syphilis. On this we cannot be too emphatic.

Before going further, Dr. Holmes, who is here, will discuss the X-ray findings.

DR. HOLMES: Such an appearance as these plates show is usually accepted as Charcot's joint. The absence of atrophy and destruction is decidedly against any infection. The loose fragments of bone in the joint are also in favor of its being a neuropathic joint of some kind, probably Charcot's.

DR. AYER: I should add that an X-ray taken at the time of the second examination by Dr. Morrison shows an identical picture with that just seen, and also that his interpretation is the same as Dr. Holmes', that this is a neuropathic or Charcot joint.

With the possible exception of the shoulder joint as an indication of *tubercles* and in the face of negative blood and fluid tests, are we entitled to make this diagnosis? We know that in Charcot joint the tests in blood and fluid are frequently negative or nearly so, so that from the fluid and blood tests alone we are not entitled to exclude *tubercles*, but a patient who has shown progressive symptoms, if due to *tubercles*, should have positive tests. If this were an old *tubercle*, only then would the negative tests be compatible with a syphilitic process.

The second examination shows a different condition from the first, almost entirely confined to the sensory tests over shoulders, upper trunk and arms. There was in this location a well marked dissociation of sensation and also evidence of trophic disturbance in the burn over

the left elbow, which showed little sign of healing.

By comparing the two examinations I think we are entitled to say that there is an active, progressive lesion in the cervical and upper thoracic spinal cord. That it is intramedullary is indicated by the dissociation of pain and temperature from that of touch. Syringomyelia is the disease par excellence in which this condition appears, and I believe we are entitled to make this diagnosis at least tentatively in his case, in spite of the fact that we have not two other characteristic findings of syringomyelia, namely a spastic paraplegia and atrophy of the intrinsic muscles of the hand. We must also consider in differential diagnosis intramedullary tumor.

He was to have had X-ray therapy, but owing to the fact that shortly after my last examination he developed pneumonia, this treatment has been postponed. (Note. The patient was seen again on June 22, 1926, with essentially the same findings as in January.)

One point in the history is stressed by the patient himself, but probably without significance, namely the injections of antitoxin fifteen years before which led to abscesses of the back. It is difficult to relate this old infectious condition to the present degenerative spinal cord lesion. Phillips has shown in three cases trauma as a factor in the causation of neuropathic shoulder joints. In speaking to him of this case, however, he said, "Well, it will probably turn out to be syringomyelia."

DR. HOLMES: Charcot in his original description mentions syringomyelia as a cause of the joint.

DR. AYER: Instead of *tubercles*?

DR. HOLMES: No. They do not have to have *tubercles*. Charcot's joint is recognized as occurring in syringomyelia.

DR. AYER: Did he speak of the shoulder?

DR. HOLMES: No.

DR. AYER: Do you remember roughly how many shoulders you have seen?

DR. HOLMES: No, I should not dare to state. I have seen a few shoulders. Of course the weight-bearing joints are the ones we usually see.

DR. AYER: The usual order I should think is knee, hip, ankle, spine—perhaps spine before ankle—always low dorsal or upper lumbar.

DR. RICHARDSON: What is the outcome of X-ray treatment in syringomyelia?

DR. AYER: A great many think that syringomyelia is a tumor, and the pathology in some ways suggests that this is so. The earliest pathology noted is a thinning of the cord substance in the neighborhood of the central canal. This process goes on to disintegration, leaving a cavity which later connects with the central canal. About this enlarged cavity there is a marked cellular and fibrillar gliosis. The process then

enlarges, mostly in the gray matter of the cord, picking up early the sensory fibers as they cross to the opposite side, leading to the symptom of dissociation of sensation; later the pyramidal tracts are pressed upon. The theory of the treatment is to stop the overgrowth of cells.

DR. HOLMES: Of course we do not expect to have the patient improve. What we hope is that he will not get any worse. The cases we have treated have rather borne that out. We have had one under observation for ten years, and there has been no demonstrable advance in the lesion. It must have arrested the process.

DIAGNOSIS

Syringomyelia, very early.

CASE 12313

SHOULD OPERATION HAVE BEEN WITHHELD IN THIS CASE?

SURGICAL DEPARTMENT

An Italian cotton mill sweeper sixty-two years old entered February 10, five months before his final admission. The complaint was dyspnea with edema and pain in both legs for a month. The history was taken through an interpreter. The patient did not know the causes of death of his parents. His wife died of tuberculosis. Three children were well.

He took considerable alcohol when he could get it. Otherwise his habits were good.

He had had three attacks of bronchitis, thirty-seven, thirty-five, and thirty-three years ago. Two years ago he had some (abdominal?) pain thought to be due to an indiscretion in diet. He urinated five or six times at night and every hour or two hours by day, with urgency. He was occasionally incontinent at night. He had some trouble in starting the stream. His weight had fallen in six months from 145 pounds to 138.

He was well until a month before admission. Then he first noticed slight swelling and a tingling sensation of the legs and feet, coming on usually in the evening after he had been on his feet all day. At times he also had some swelling and pain about the eyes, and the same pain in the occipital region when going up or down stairs. During the past month he had been short of breath upon the least exertion, with slight pain in the chest. Lately he had had very slight cough, not productive. During the month his skin had turned slightly yellow. At a hospital in another city he was told nothing could be found wrong with him. He had not noticed being weak or tired. He had had no gastro-intestinal symptoms whatever during the past year.

Examination showed a well nourished man with pale skin and mucous membranes, in no

special distress. The heart showed no enlargement. There was an early blowing systolic murmur at the apex. The pulmonary second sound was audible. The blood pressure was 115/70. The lungs showed slight dullness in the left lower back, many consonating râles in the right lower back, and bronchovesicular breathing in the left upper chest front and back. The spleen was just felt. The liver edge though not distinctly felt seemed to be 3 or 4 centimeters below the costal margin. The prostate was large and tender, but not hard. There were external hemorrhoids, questionable varicocele, and pea-sized inguinal glands. Both lower legs showed pitting edema. The pupils reacted sluggishly to light and distance. The reflexes were active.

The amount of urine was normal when recorded. The specific gravity was 1.010 (two examinations), no albumin, occasional leucocytes once. Renal function 35 per cent. Blood: 4,000 leucocytes, 82 to 69 per cent. polynuclears, 3,480,000 to 4,310,000 reds, 35 to 50 per cent. hemoglobin. The red cells showed moderate variation in size and shape, achromia at both examinations, marked at one, which showed many irregular forms and frequent macrocytes. The average size of the red cells was large. The majority were achromic. Certain fields looked like typical pernicious anemia. The smear as a whole resembled secondary anemia. The platelets were normal or slightly diminished in number, individually very large. There were occasional polychromatophilic cells. Howell-Jolly bodies were present. Reticulated cells two per cent. Wassermann negative. Stools: Guaiac positive at all of five examinations, strongly at two, very strongly at another.

X-ray showed a large irregular filling defect involving the lower half of the stomach, most marked on the lesser curvature. Peristalsis absent. This portion of the stomach appeared rigid. No retention of the motor meal. The stomach emptied rapidly. The first portion of the duodenum appeared normal in contour. The motor meal was found in the terminal ileum at the end of six hours.

A genito-urinary consultant agreed that the prostate was moderately enlarged, but thought it probably was not malignant.

The temperature was 98° to 99.4°, the pulse 70 to 89, the respiration normal.

Before the X-ray examination the patient was put on an anemia diet, on which he had no gastro-intestinal symptoms. He was advised to have an operation but refused. February 20 he was discharged.

June 11 he came to the Out-Patient Department complaining of epigastric pain, occasional vomiting, and inability to eat. He now wished operation. He weighed 133 pounds. He was pale, but did not seem weak. No abdominal mass was palpable.

July 13 he was readmitted to the wards. On

examination he was now rather undernourished, pale and worn looking. Small glands were palpable over the outer ends of both clavicles. He resisted pressure in the epigastrium. No abdominal masses were felt. The liver edge was felt two fingerbreadths below the costal margin. The rest of the examination was as before. There was a small hydrocele.

Before operation the urine was negative, the leucocyte count 7,700, polynuclears 75 per cent., hemoglobin 50 per cent., reds 3,328,000, with little change in size and shape. The platelets were normal.

X-ray: The filling defect appeared to have progressed since the previous observation and now involved part of the posterior wall and lesser curvature. There was also a retention of about one-third of the motor meal. The first portion of the duodenum appeared normal.

Before operation the temperature was 98.4° to 99.2°, the pulse 95 to 71, the respiration normal.

July 15 operation was done. The patient made a very poor ether recovery and showed shock and sweating. In the afternoon his pulse went to 144. After transfusion of 550 cubic centimeters of blood he did not seem to improve much. Next day the pulse was 120 to 140 and poor in quality. The temperature was 102.2°. The respiration rapid. He vomited twice and looked very ill. July 17 he seemed better and had no vomiting. By the 19th he had a better color and did not look so ill. The abdomen was greatly distended. The night of the 19th he began to fail. Early the next morning he died.

DISCUSSION

BY EDWARD L. YOUNG, JR., M.D.

It is always a handicap in getting a history to get it through an interpreter, as we may miss the whole point of the story.

I should call his a negative virtue.

With the presenting symptoms of weakness at sixty-two of course we always think of malignancy as one cause; also with urinary symptoms we think of beginning renal damage due to back pressure of a prostatic obstruction.

The physical examination does not help us very much. There are varying indefinite symptoms that are scattered.

There is no serious damage indicated by the urinary examination.

The hemoglobin is definitely down. There is a high color index.

Positive guaiac in the stools suggests a possible cause for the anemia. After the blood experts have finished studying a given specimen sometimes there is even then a wrong decision arrived at, because certain cases of longstanding secondary anemia can be told with very great difficulty if at all from primary anemia,

and I think in borderline cases, especially in a man of this age, it is always wise to be very suspicious of malignancy. I think, as I recall it now, that hypernephroma and carcinoma of the stomach have been the two conditions that have been most frequently the malignant background in a case of secondary anemia of marked degree suggesting a pernicious anemia. Of course here also there is the bleeding by rectum spoken about, and that might in itself, if long continued, cause secondary anemia but of course should have direct examination of the gastrointestinal tract to see if there is malignancy there.

Dr. Holmes, do you want to comment on the X-ray plates?

Dr. HOLMES: With such a filling defect as this, angular in type, with absence of peristalsis, it usually means carcinoma, particularly if there is no stasis. Ulcer of the same size and deforming the stomach to the same extent would produce stasis. Of course later on he shows a still greater defect with distinct mottling, and at that time did have some stasis. But the lesion involves both curvatures and is all out of proportion to the amount of stasis.

Dr. YOUNG: It seems fair, in view of the clinical history, with this additional evidence, to make a diagnosis of carcinoma of the stomach.

With a defect of this size in the stomach what chance is there, as you have seen it, for a radical cure?

Dr. HOLMES: None.

Dr. YOUNG: Isn't that a pretty extensive defect?

Dr. HOLMES: However, it is a little dangerous to make a prognosis from X-ray alone. Sometimes a good deal of the appearance is due to distortion and spasm.

Dr. YOUNG: I don't think it is ever fair to refuse operation, because we cannot tell until we get in there. The only thing is that I think the patient or his family must understand that even an exploratory operation is not devoid of danger. It may upset the whole balance of his mechanism and prove fatal. But assuming that he is in reasonably good shape a quick gastro-enterostomy might relieve the symptoms of obstruction until he went out from the malignancy itself. I think it is fair to assume that they found an inoperable condition. But I think in these borderline cases the only way we are ever going to get a cure is to give the patient a chance if we think there is a chance. Of course some patients are in such poor shape and the lesion is so extensive that operation is obviously impossible.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Carcinoma of the stomach.

PRE-OPERATIVE DIAGNOSIS

Carcinoma of stomach.

OPERATION

Bilroth II. On exposing the stomach a large movable mass was found involving the pyloric end. The tumor with adhesions was the size of an orange, and the transverse colon was adherent to it. Not many glands were felt. The tumor mass was freed from its blood supply. The duodenum was cut across with the cautery. The tumor was lifted up and the lower third of the stomach excised. Both ends were sewed up with through and through sutures and turned in with silk sutures. A considerable part of the blood supply of the transverse colon was cut across. The bowel looked somewhat dusky in color. Through this opening a loop of jejunum was approximated to the anterior wall of the stomach and a gastro-enterostomy was done without clamps. The incision was closed without drainage. "The operation was more extensive than I thought it would be when I started to excise the tumor. I think the case was too extensive for operation."

PATHOLOGICAL REPORT

A large portion of stomach with the pylorus, measuring 12 centimeters along one curvature. No glands can be found in the omentum. On section it contains an ulcerated growth measuring 7 by 12 centimeters, extending from one curvature on to both anterior and posterior surfaces, leaving a small uninvolved portion of mucous membrane which has gristly hard elevated margins and a smooth depressed center.

Microscopic examination shows a structure of irregular gland tubules lined by atypical epithelial cells with several layers invading the muscular wall.

Adenocarcinoma.

FURTHER DISCUSSION

The death is pretty late to say shock alone. It is about the time we should expect peritonitis to appear, and the mere fact that there was no other evidence of peritonitis than distension does not prove that it was not there.

DR. MIXTER: Don't you think that where we get a loop of bowel, whether large or small, adherent to a cancerous mass it is questionable judgment to attempt a gastrectomy?

DR. YOUNG: I have always believed that the chance of cure in such cases is absolutely *nil*, that the freeing of that mass that would interfere with the blood supply means that the thing is so adherent that we certainly have not got it all. Moreover the shock I think adds a great deal to the operation.

DR. MIXTER: Isn't the almost useless gastrectomy a poor operation in comparison with a gastroenterostomy?

DR. YOUNG: Here I should have assumed that gastroenterostomy might have given him several more months of comfort.

DR. MIXTER: What I am getting at is the fact that the fashion in surgery seems to be at the present time gastrectomy as against gastroenterostomy. Now gastroenterostomy in the large majority of cases is a very satisfactory operation to the patient, and I think that at present there is too much of a wave toward gastrectomy and away from gastroenterostomy in the presence of obstruction. In the absence of obstruction gastroenterostomy is not a very useful operation. In the presence of obstruction it is.

DR. YOUNG: I think that is very true. Certainly here it seems as though gastroenterostomy would have been unquestionably better.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Gastric carcinoma.
Bronchopneumonia?
Intestinal obstruction.
Operation, Bilroth resection of stomach.
Transfusion.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Carcinoma of the stomach.
Peritonitis.

ANATOMICAL DIAGNOSIS

(Adenocarcinoma of the stomach.)
Necrosis and perforation of the wall of the transverse colon.
General peritonitis.
Pylorectomy.

DR. RICHARDSON: The skin generally was sallow. There was the operation wound mentioned. Examination was made through the wound of operation, but there was room enough to find out what the trouble was. The abdomen was distended, the wall tense, and on opening the peritoneal cavity a puff of air escaped. Of course that indicated a hole somewhere in the gastro-intestinal tract. The cavity itself showed frank fibrinopurulent peritonitis.

The wall of the transverse colon in the region of the middle third showed extensive marked necrosis, with many perforations. The appendix was negative. The pyloric end of the stomach was wanting. The remaining portion of the stomach was sutured off at its lower end and anastomosed to the jejunum. The sutures were intact and no leakage was made out. The upper end of the duodenum was sutured off, the sutures were intact and no leakage was made out.

No metastases were found and no definitely enlarged glands. The gall-bladder was negative, and the thoracic organs to the touch were negative.

DR. YOUNG: In view of the absence of metastases it is too bad they could not have got at him four months earlier.

DR. MIXTER: Even so, it is probable that he would have had metastases two years later, with such an extensive mass.

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THE HIGH COST OF ILL HEALTH

A RECENT estimate, published in the *New York Times* and quoted in *Science*, places the annual cost of medical service in this country at \$1,015,000,000. This sum is divided as follows:

Drugs, including patent medicines	\$ 500,000,000
Doctors' services (estimated on basis of average income per doctor per year of \$1,500)	220,000,000
5% interest on the \$624,000,000 of hospital investments in land, buildings, and furnishings	31,000,000
Hospital Maintenance	264,000,000
	\$1,015,000,000

This tabulation was commented on by Senator Ransdell, of Louisiana, in supporting a bill providing for the appropriation of \$20,000,000 for the study of the cause, prevention and cure of disease. Senator Ransdell's bill, which contemplates the annual appropriation of \$2,000,000 a year for five years, to provide for the enlargement of the Hygiene Laboratory of the Public Health Service into a chemo-medical research laboratory, provides also an additional \$10,000,000 to establish an academy of health in the District of Columbia or its vicinity.

The achievements of such private institutions as the Rockefeller Institute and the Carnegie Institution are recognized, but it is felt that in these institutions comparatively little time is allowed for concentrated work on problems of major importance, or opportunity given for coöperative effort of chemist, biologist, pharmacologist, therapist and physiologist.

Any great effort at promoting health and studying disease must be commended providing it is gone at wisely and its funds are properly utilized. Government management in the United States has, on the whole, been nothing to brag about in the past. It is difficult to free governmental activities from the intricacies of red tape and forms in duplicate and triplicate, and even, at some times, from the stultifying influence of politics. Greater opportunities provided for the Public Health Service should be of value, for that Service has always maintained the highest traditions. We hope that this bill has not been conceived in the same spirit that prompted a recent one, designed to promote the anthropometric study of our law-makers.

We note that the estimated annual expenditure for drugs, including patent medicines, was \$500,000,000, nearly double that for any other items. If Congress really wishes to save the public some money in its search for health it might begin by putting the lid on the patent medicine business. This would undoubtedly receive the hearty support of the daily press.

THE WAR ON MEDICAL FAKIRS

THIS contest has been waged for years by the American Medical Association which is amply endowed and equipped to study and publish the doings of the underworld in medicine. It has done this work well. There is, however, opportunity for more definite state activity because matters of local interest are more quickly recognized near the source. The difficulty with state attack on the medical fakir lies often in the lack of machinery in a state medical society prepared and qualified to do the necessary detailed work. There is also the objection which appeals to some to the effect that the motive behind a state society in campaigns of this sort is founded on selfish grounds or trade union spirit; that it may be due to jealousy and a desire to eliminate competition. This last idea is not a rare interpretation of the situation by the laity, for it has often found expression in hearings when the state society through its officers has advocated advanced public health measures or higher standards of medical practice.

The independence and standing of the American Medical Association is such that the charge of selfishness is abused, but even in this case it has a certain influence with the public.

Some very estimable physicians seem to be

lieve that dabbling in the unpleasant field of politics or attacking the quack on his own ground is undignified and tends to dishonor scientific medicine and lower its prestige, but we believe that there is little logic in this contention, for the more intelligent and better qualified elements in society have a responsibility with respect to those who are easily misled. If it was not so, the general trend of government would be founded on a false premise, for society has advanced very far in its care of those who cannot protect themselves, and it is very often demonstrated that the victims of physical or mental disabilities are not equipped to maintain a sane attitude in the presence of specious appeals.

The art of advertising promotes the sale of large quantities of comparatively useless products and in the case of drugs and medical service, claims which are absurd to the well developed intelligence will find many believers. The credulity of certain types of minds is surprising. Since the stronger ought to protect the weaker there is sound logic in the assertion that physicians should instruct the laity and warn them of dangerous practitioners.

State societies have done this in a sporadic way but the most striking example of good work which has brought the desired result is to be found in the campaign inaugurated by *Southern Medicine and Surgery*, the Official Organ of the Tri-State Medical Association of the Carolinas and Virginia. This *Journal* has dedicated itself to the war on fakirs and has given evidence of its purpose in its report of its exposure of the claims of Dr. Julie LaSalle Stevens, recently of Charlotte, N. C. The record shows that persistence and discretion brought about the desired result.

We can do no better than quote a part of the closing section of this report:

"It is a sad commentary on a community that a smooth-tongued stranger would dare come in, without credentials, represent herself as an intimate of many world-renowned persons, and as having been graduated from three great universities; and a sadder one to record that, apparently, these fraudulent representations were accepted as authentic until inquired into by doctors. Is there not need for protection?"

"If we are half as zealous for the promotion of the public health and the protection of the credulous weak against the rapacious and unscrupulous strong, as we say we are; if we are half as earnest for the protection of the good name of doctor and of our commercial rights as we should be, the time is at hand when doctors will take their rightful place among men, and at death leave something other than uncollectible accounts to their families."

A COMMITTEE TO INVESTIGATE CHIROPRACTIC

The last New York Legislature appointed a committee to investigate the work of chiropractors within that state and report on or before February 15, 1927. The committee consists of

Senators Karle of Queens and Shackno of Bronx and Assemblymen F. M. Smith of Otsego, Allen of Dutchess and Reidy of Bronx. Five thousand dollars was appropriated for the expenses of this committee. The committee is directed to propose such legislation as may be indicated.

This is a very important move and if the committee proves to be a real investigating body the result of the study will be valuable. The medical profession of New York will have an opportunity to explain the fallacies of this cult, but the most impressive testimony will be given by the chiropractors.

Of course, the sessions will provide opportunities for chiropractic advertising as shown so often in general legislative hearings, but a committee composed of intelligent persons can easily estimate the quality of the testimony.

SOME UNPLEASANT DEVELOPMENTS RELATING TO CRIMINAL PRACTICE

THE sordid nature of some members of the medical profession has come to the surface in the death of two young women who were victims of attempts to relieve them of their pregnancies.

The first was to some extent patterned after the somewhat notorious suit case affair of several years ago, when the dismembered body was sunk in the harbor within a suit case.

The second presented no unusual features. Both were the result, none too rare, of work attempted by the bunglers in surgery. Fortunately the really skillful surgeon is seldom tempted by the unfortunate victim and her associates to engage in this practice.

The doctors who are under suspicion are not members of the Massachusetts Medical Society or so far as we know are not members of any reputable society.

It is true that Dr. Nolan graduated from a reputable medical school but the newspaper report that he had had some connection with some of our large hospitals is incorrect except so far as permission was given to him early in his practice to be present at the out-patient department of Carney Hospital but this permission was withdrawn after a very brief period because his behavior was unsatisfactory. His right to practice in Massachusetts was revoked by the Board of Registration in Medicine July 23, 1923, because of an alleged connection with an abortion case.

Dr. Walsh has been under suspicion at times for unethical conduct and he too was deprived of his right to practice by the Board in 1921, also for an alleged connection with an abortion case.

Dr. Hanson achieved notoriety by his activities in connection with a death following an operation under circumstances which raised the question as to his skill and judgment and, in

addition, an attempt to establish practice as a follower of those who expected to overcome the disabilities of age by gland transplantation. A considerable number of his neighbors were desirous of having him depart from the cape where he had an establishment. He afterward had an office in Boston. He is a graduate of the Philadelphia College of Osteopathy. He has not been in the public eye lately and denies having had any association with Dr. Walsh, but the authorities evidently felt otherwise and have arrested him and brought him to Boston.

These three doctors will have an opportunity to defend themselves before the courts.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

MILLER, RICHARD H., A.B.; M.D. Harvard Medical School 1910; F.A.C.S.; Instructor in Surgery, Harvard Medical School; Assistant Visiting Surgeon, Massachusetts General Hospital; Assistant Surgeon, Beth Israel Hospital. His subject is "Cancer and Diverticulitis of the Large Intestine," page 253. Address: 270 Commonwealth Ave., Boston.

EADES, MARION F., A.B.; M.D. Harvard Medical School 1922; Member, A. M. A. and N. J. Medical Society. His subject is "Postoperative Massive Atelectasis," page 258. Address: Franklin Hospital, Franklin, N. J.

HOLMES, ARTHUR D., B.S.; Ph.D. Johns Hopkins University 1912. Detailed history appears page 750, Volume 194, No. 16, BOSTON MEDICAL AND SURGICAL JOURNAL. His subject is "Studies of the Vitamin Potency of Cod Liver Oils—XX—Effect of Light on the Vitamin A Content of Cod Liver Oil," page 263. Address: The E. L. Patch Company, Stoneham, Mass.

HUBER, EDWARD G., A.B.; M.D.; Dr.P.H.; Major in Medical Corps, U S. A. His article on "The Control of the Communicable Diseases Prevalent in Massachusetts with a Study of the Mortality Due to Them During the Past Seventy-five Years" is continued on page 266 of this issue. Address: War Department, Washington, D. C.

MISCELLANY

WARNS OF POISON ALCOHOLIC BEVERAGES

MAJOR CHESTER P. MILLS, Prohibition Officer for the New York District, warns the public that New York City will soon be inundated by "a wave of poison liquor" which will cause death, blindness, paralysis, etc. An autopsy on a man dying in Bellevue Hospital gave evidence of wood alcohol poisoning. Forty-one deaths caused

by bootleg liquor have been recently reported in Buffalo.

If a large amount of wood alcohol is being distributed, the wave will extend beyond New York.

FITCHBURG, MASS., CLASS OF 74 GIVES DEMONSTRATION

CLASSES taking Home Hygiene and Care of the Sick under the Fitchburg, Mass., Chapter held public exercises in a school auditorium at the end of the term, receiving their Red Cross certificates and giving public demonstrations.—*Bulletin Red Cross.*

RECENT DEATH

WHITAKER—DR. CLARENCE WILDER WHITAKER, a Fellow of the Massachusetts Medical Society since 1885, died of heart disease at his home in Worcester, July 19, 1926, at the age of 68.

Dr. Whitaker was born in New Salem, Franklin County, in 1857, the son of Albert W. and Maria (Davis) Whitaker. He was educated there, graduating from the New Salem Academy, and then from the University of Vermont, where he received his degree, Doctor of Medicine, in 1883. He started his practice in Yarmouthport, and went to Worcester in 1890. He was a member of the First Unitarian Church, and of the Laymen's League; a member of Worcester Lodge, I. O. O. F.; Athelstan Lodge, A. F. and A. M.; Worcester R. A. Chapter; Hiram Council, R. and S. M.; Worcester County Commandery, No. 5, K. T.; Goddard Council, Princes of Jerusalem; Worcester Lodge of Perfection, Lawrence Chapter of Rose Croix, the Massachusetts Consistory, and the Aleppo Temple. He was also a member of Stella Chapter, O. E. S. He leaves his daughter, Ethel W. Whitaker of Worcester, and a sister, Mrs. Stella Skinner of North Dana.

OBITUARY

IN MEMORIAM: HENRY FOX HEWES

ALTHOUGH I imagine that he would be the last to expect, want, or even sanction it, it is inevitable that there should be some expression of the honor in which Henry Hewes is held by those who knew him intimately, by those who by their knowledge and training are best fitted to gauge the depth and extent of his service, and by those who profited by his singular and high devotion to one of the greatest professions.

While I have no right to speak of him, except, perhaps, as a member of the last company, his whole bearing and attitude to life was so clearly defined that the shadow of his other relationships fell upon everything else.

He belonged to that rare company who have the larger knowledge. It was knowledge that ranged widely, over many fields. While primarily a man of science, he was familiar with the best literature; and could speak of it easily when he chose to do so. While his expert knowledge was of the human body, and still further concentrated upon one of its intricate systems,

we know not only that in earlier life he had worked with William James in his researches into the human mind, but that he always had a very complete picture of that mysterious entity that constitutes a human being, mind and body in indivisible unity.

Those who are in any sense his peers know best the range of this knowledge and the irreparable loss to the world in his going; but even the layman who was his patient was conscious of its presence; and with that awareness there was born in those with whom he dealt, a very singular and complete trust.

I recall as a remarkable tribute that one who did not often speak in praise of any human being once said of him: "I would trust him to the limits of his knowledge, and to tell me where that knowledge ended."

This also was of his greatness, that he never deceived himself and he did not deceive others as to the vast interval there is between science and omniscience. He carried the torch far and high, but he knew where darkness dwelt. I think he knew what Huxley meant when he wrote to Kingsley: "The longer I live, the more obvious it is to me that the most sacred act of a man's life is to say and to feel: 'I believe such and such to be true'."

Even the layman could understand that here was a man who had a high and unblurred ideal for his profession. There was not the faintest tinge of commercialism about him either in thought or action. He would not bend to the tricks of trade, or to the kind of small merchandise of manner and device out of which some make success of a kind, with those who like humbug, or at least must have it. It seemed to me that the high tradition under which he practised had become as hard as marble and as white; and yet with it went a kindness and a charity, a doing of many things for the poor and those in difficulty which he shared with a multitude of others in his profession.

And that touches another strange and wonderful fact about him. He had a conscience that always seemed to be the product of some older vein of thought and feeling, and even of a religious world, a theology that had perished, under the disintegrating influences of a new world and the processes of his own thought. But the gem itself still lay in the center of his life. He had a far clearer conception of what is right and what is wrong, with the faith of an agnostic, than many who live under the undimmed heaven of over-confident and over-certain religious beliefs.

The world gathered a certain dimness about him, especially in these last years when the physical enemies he had so long fought for others made way against him. He had tasted and seen much, that he was willing to leave to others who had the energy and interest for it.

He left many of the problems with which he had once wrestled, unsolved. Life tapered to a narrower path, and the island of his immediate concern grew smaller; but there was a true and great spirit in him to the last. He worked in the twelfth hour of his day, as few men would work, against such heavy odds, and he worked for something that had his heart: for the long line of those who looked to him for the skill and mastery that was his; and for that little circle that was in his home, and they know how steadfastly they were in his heart all the way through unto the end which is not the end.

He died in service for these two great things. And if God is the mighty soul of the world, and judges by a light denied to mortal sight, He recognizes his sons and fellow-workers even when they do not clearly discern him. If the universe is not friendly to Henry Hewes living after this fashion, and gone now into fuller light, we may well wonder whether it has a soul. But if and in so far as we believe in the greatness that is at the center of all life and death, we can believe that he has been borne upon his shield to that Valhalla where the noble spirits are known from those that are mean and petty. If this is the comfort that we seek, even if he sought it not, it can be ours today, if God is to us the Creator and Preserver of the true greatness that is in men's souls.

(The above was the brief address given at the funeral services by the Rev. Ernest Graham Guthrie of Boston.)

CORRESPONDENCE

RICKETS AND COD LIVER OIL

Editor, *Boston Medical and Surgical Journal*:

If a little controversy is to start concerning the effectiveness of cod liver oil in preventing rickets it might first be well to define rickets. This I cannot do. Many normal infants will show at some stage in their development clinical and X-ray signs that we have been taught to believe are consistent with active rickets. These infants are not sick and do not become sick and develop no permanent deformity. These signs are most frequently found in artificially fed babies and particularly in premature babies. They are found in those who have received cod liver oil and in those who have not received it. This was brought out strikingly and statistically by May Wilson in a recent issue of the *American Journal of Diseases of Children*. Dr. Wilson, however, was also brought to the conclusion that cod liver oil, while not as effective as formerly believed in preventing rickets, does definitely control it; shorten its course and prevent its effects from becoming marked.

The feeding and hygienic care of infants is not yet ideal. Conditions of life for them are such that rickets will continue to develop. Which ones will and which will not develop the disease we cannot predict with any reasonable assurance of accuracy. Cod liver oil, so far as we know, is harmless; it is a valuable, easily digested and highly nutritious fat, aside from its anti-rachitic value. It is not objectionable to most infants regardless of their mothers, who, after all, do not have to drink it.

In view of these facts I shall continue to believe,

until proven wrong, that the universal administration of cod liver oil is a valuable adjunct in rickets control.

JOSEPH GARLAND.

270 Commonwealth Avenue, Boston.

AN APPEAL FOR EDITORIAL HELP

Washington, D. C., July 16, 1926.

Editor, Boston Medical and Surgical Journal:

Dear Doctor:

Will you make an article out of enclosures, and have it published under my name as author? I am very much overloaded and need your good help. If agreeable, will you allow me 250 reprints of (covers not necessary) article, to send to large libraries (my custom) here and in foreign countries. Incidentally, this will give your journal a permanent advertisement, as its name will appear on the card catalogues of each library.

Kindly let me hear from you soon.

Very sincerely,

ARTHUR MACDONALD.

The Senate and House resolutions are as follows:

SENATE RESOLUTION No. 255

Resolved, That the Secretary of the Senate shall employ Arthur MacDonald to make scientific studies of man, at a salary not to exceed \$2000, per annum, to be paid out of the contingent fund of the Senate until otherwise directed.

That said studies shall be along anthropological, psycho-physical and statistical lines, and that the said Arthur MacDonald shall report annually to the Vice-President the results of his studies and investigations, which with the approval of that Officer, shall be published. (Introduced by Dr. Copeland.)

The general lines of work proposed are mentioned in this Resolution. Special lines of inquiry under the head of "anthropological" and "psycho-physical" include measurements of Members of Congress; about 25 Senators and 75 Representatives have already been measured. This may serve as an introduction. To make this initiatory investigation of more scientific value, larger numbers of Members of Congress should be measured. As has been said (and should be repeated) no name of any Member of Congress under any circumstances shall be mentioned. Science has no use for personal names.

When a sufficient number of Members have been measured, it will establish the general physical status of Congress, which can be used as a measuring rod for the United States. Efforts are already being made to have Legislators of other countries similarly studied, but our country is the first and should continue to lead in this comparative anthropology of legislative man. From the head measurements it will be possible to estimate the average weight of brain of State and National Legislatures. This new tentative formula to estimate the weight of the brain is as follows: (Head length — 10) × (head breadth — 10) × (head height — 10) × .000337 + 406.01 = cranial capacity in cubic centimeters, which multiplied by .90 gives the weight of the brain of living persons in grams.

Under the head of "statistical," an analytical summary of the biography and legislative activities of Congresses for the last 20 years could be made. Already such a study of the Senate of the 62nd Congress has been made by Arthur MacDonald. Thus comparisons between the different Congresses and between the State Legislatures may prove interesting and valuable. Also knowledge of the inner activities of Congress, such as relatively small number of bills passed (only 2½ per cent. of private and 10

per cent. of public bills in 62nd Senate) would help the people to understand Congress better, especially the difficulties Members have to meet. Also many wrong ideas and unjust criticisms of Congress would be modified and corrected. Comparison between political parties and divisions of each party can be made and also between the State Delegations.

The tacit assumption in all these studies is that all organizations of men, especially those of long standing and still more particularly those that result from competitive methods are not haphazard, but act according to laws most of all of which are yet unknown, so the acts of Congress as a whole are not accidental but also work according to laws yet unknown. These like all other laws will be discovered, not only through extensive, but more especially by scientific, intensive study.

A brief résumé of Arthur MacDonald's training is as follows: Graduated (A.B.) from the University of Rochester, N. Y., 1879; post-graduate in philosophy at Harvard University, 1883-1885; appointed "Fellow in Psychology" at Johns Hopkins University, 1885; studied medicine (full course), anthropology and psycho-physics in the Universities of Berlin, Leipzig, Paris and Zurich from 1885-1889; appointed Docent ("distinct advance beyond the Doctorate") in criminal anthropology in Clark University, Worcester, Mass., 1891-1892; appointed Specialist in Education as related to abnormality, United States Bureau of Education, 1892-1903; engaged in sociological and anthropological research, Washington, D. C., 1904-1924; and in St. Elizabeth's Hospital, 1925-1926.

Arthur MacDonald is author of the following works: "Man and Abnormal Man," "A Study of the United States Senate" (also in Spanish); "Mentality of Nations" (also in German and Spanish); "Scientific Study of President Coolidge" (in French and Spanish); also "Scientific Study of Vice-President Dawes" (in French); "Anthropology of Modern Civilized Man" (published also in India and in China in Chinese language) and numerous other studies of the normal and abnormal.

HOUSE RESOLUTION 304

(Introduced by Dr. Kindred and referred to Committee on Accounts.)

Resolved, That the Clerk of the House shall employ Arthur MacDonald to make scientific studies of man, including a study of Congress and its activities, at a salary of \$1000 per annum, to be paid out of the contingent fund of the House, until otherwise provided for by law.

That said studies shall be along anthropological, psycho-physical and statistical lines, and that said Arthur MacDonald shall report annually the results of his studies and investigations to the Speaker of the House, which shall be published with the approval of that officer, but not otherwise.

That under no circumstances shall the name of any Member of Congress be mentioned.

EDITORIAL REPLY

July 21, 1926.

Mr. Arthur MacDonald,
The Congressional Apartments,
Washington, D. C.

Dear Sir:

Your letter of July 16, 1926, has been duly considered. I do not feel that I can write anything which would be acceptable: First, because I am not in sympathy with the action of Congress in making an appropriation for the scientific study of man under the Copeland and Kindred resolutions, and second, I decline to write an article to appear over another man's signature.

I am further of the opinion that no competent man could afford to do worthwhile work for the sum men-

tioned and also that Congress had better leave this kind of study to other persons and organizations and devote its resources to matters for which it is more distinctly responsible.

I am enclosing the material sent by you.

Very truly yours,
WALTER P. BOWERS,
Managing Editor.

THEORY OF EVOLUTION FOUNDED ON HUMAN TAILS

My dear Sirs:

Herewith I send you two positively genuine pictures of children with tails. There have been probably more than half a hundred of such cases. Professor Harrison refers to five cases which have appeared in the United States.

I also enclose a copy of a letter which I wrote to *Science* with further very strong reasons to support the animal ancestry of man.

Very truly yours,
W. W. KEEN.



FIG. 4.

FIG. 4. Photograph of case of Professor Ross G. Harrison, *Johns Hopkins Bulletin*, 1901, XII, 96. Harrison refers to five other cases in the United States.



FIG. 4a.

FIG. 4a. Photograph of boy of twelve with tail ten inches long. (Longest on record.) Case of Etienne Rabaud—*La Nature*, March 1, 1889, page 53. See also *Scientific American*, 1889, L.X., 295 and 296.

COMMENT:—The article published in *Science* may be found in the issue of June 11, 1926, Vol. LXIII, No. 1641, pages 595-596. Dr. Keen is evidently trying to support the theory of evolution which is quite generally accepted by scientific minds. We are not quite sure from the evidence submitted that the appendages are true tails, for teratomata which have no connection with the spinal column cannot be regarded as true tails, but which have in some instances been regarded as tails. If Dr. Keen can show that the appendages shown in the pictures are prolongations of the coccyx his theory founded on these specimens seems to be reasonable. We do not feel that evolution requires even a human tail to support the general trend of evidence, although a true tail would be a strong argument.

THE SHEPPARD-TOWNER ACT

July 15, 1926.

Mr. Editor:

Your editorials are up to a very high standard and the one today is excellent in its censure of the Shepard-Towner Act.

However, it should go farther.

The sponsors of that act boast that it is the entering wedge for the nationalization of women and children—that is, giving the right to any woman, married or single, to be cared for by the State during her pregnancy, and to have her child so taken care of. That aspect of the act is too appalling.

Very truly,
HOWARD T. SWAIN.

LONDON LETTER

(From Our Own Correspondent)

London, June 1, 1926.

OPENING OF THE NEW OBSTETRIC HOSPITAL AND THE NEW NURSING HOME OF UNIVERSITY COLLEGE HOSPITAL, LONDON

On May 25, the Prince of Wales inaugurated one of the most notable of recent developments in the hospitals' organization of London. He opened the new obstetric hospital and the new nurses' home which have been added to University College Hospital as the outcome of the Rockefeller Foundation grant of £1,205,000 (\$6,025,000) for the improvement of medical education in the British Isles.

When the King laid the foundation stones of these buildings in 1923 he acknowledged the gift on behalf of the Empire, and called for the raising of £180,000 (\$900,000) necessary for the endowment of beds in the new maternity hospital. So well has this appeal been responded to that the whole of the money has been received. The opening of this additional hospital with its 30 obstetric and 30 gynecological beds, and its resident medical and teaching staffs, completes the last of the three teaching units of the University College Medical School: medicine, surgery and obstetrics. The building of a new nursing home to accommodate the enlarged staff necessitated by the extensions has released the old home for absorption into the general hospital, which will thus have 100 more beds added to its existing 300 beds.

The opening ceremony was performed in the presence of a distinguished gathering in the grounds of University College. America's close association with the proceedings was marked not only by the presence of Counsellor F. A. Stirling, representing the United States ambassador, who was unavoidably prevented from attending, but by the playing by the Grenadier Guards' band of the American national anthem immediately following "God Save the King."

ROYAL EAR HOSPITAL

Another important event with which the Prince of Wales was associated on May 28 was the Royal Ear Hospital, now in course of erection in Huntly Street, London. It has been provided by the generosity of Lieutenant-Commander Geoffrey Duveen as a memorial to his parents, Mr. and Mrs. H. J. Duveen. At a cost of £65,000 (\$325,000), London has been given a new center of treatment, teaching and research in connection with ear, nose and throat diseases, with 38 beds for in-patients and ample space for the treatment of out-patients.

CONGRESS ON HYDROLOGY IN CZECHO-SLOVAKIA

The annual meeting of the International Society of Medical Hydrology took place in Czecho-Slovakia. The most interesting part of the meeting was the discussion on the etiology and treatment of rheumatism. Rheumatism in its various forms is now regarded, and rightly so, as the most deadly and dis-

abling and crippling of all diseases. In its acute form and to a lesser extent in one or more of its chronic forms, it brings about heart disease more than any other malady, and thus may be termed the most deadly disease. In its arthritic and fibrositic forms it is the most disabling and crippling disease, and to rheumatism may be given the name of the "Industrial disease."

On November 27 last, at a joint meeting in London of the Balmecological and Hydrological sections of the Royal Society of Medicine, the problem of rheumatism was discussed exhaustively by authorities from all parts of Europe and Great Britain. At this meeting Sir George Newman, chief medical adviser of the British Ministry of Health, pointed out that in Great Britain there was being lost, or there was being spent in benefit, much of which was lost, £2,000,000 (\$10,000,000) a year in this group of disease, and among the insured population of 14,000,000, time equal to 2,600,000 weeks, or 60,000 years per annum. This amount of invalidity was recognized by the government as an equally serious burden on the state to that caused by such other diseases as cancer and tuberculosis. There was thus need of active organized treatment, as at present it was quite inadequate. In all countries this particular problem should be tackled.

At the Congress in Czechoslovakia, Sir William Wilcox of London, in introducing the discussion on the etiology and treatment of rheumatism, developed his well known view that all forms of chronic rheumatism, articular and non-articular, were produced primarily by septic infection. He admitted many other possible factors in causation, "but," he said, "the contention that any of these can be considered as a main cause of rheumatism cannot be regarded seriously." Even faulty metabolism and endocrine disorders must be looked upon as the results of the toxemia of infection.

Dr. Mongeot, criticising the infection theory of rheumatism—these words have a different connotation in France—said that among latent infections in the arthritic diseases that of the colon occupied in his opinion the chief place. Hepatic insufficiency was also an important etiological factor, causing a deficiency in oxidizing ferments. A third factor in arthritis, especially in middle life, was endocrine deficiency, and trophic cases suggested a nervous element in many cases.

Dr. Van Breemen said that the scientific study of rheumatism during the past 20 years had led to a cul-de-sac, mainly as a result of the dominance of pathological anatomical conceptions and of classifications arising therefrom. Four separate factors in his opinion made up the causation of rheumatism, operating in different degrees in different cases. He suggested that these four factors should be especially studied at all clinics for rheumatic cases: (1) Local infection and local reaction; local temperatures to be investigated, and evidence sought by blood investigations, etc., of the connection between local infection and rheumatic disease. (2) The arthritic diathesis; a study of metabolism, autonomic nervous system, condition of the blood, fatigability, and so on. (3) Derangements in the circulation of the skin. An exact measurement of skin temperature is required. (4) Reaction to external physical conditions, the influence of heat and cold, dry and moist weather, as well as occupation, to be more closely studied. Dr. Van Breemen regarded chill from exposure to damp cold as an important factor in many cases and advocated external methods of treatment for all forms of chronic rheumatism.

All the speakers advocated treatment by hydrology in all forms of chronic rheumatism.

ANNUAL CONGRESS OF ROYAL INSTITUTE OF PUBLIC HEALTH

This annual congress was held in Bristol from

May 19 to 24. In a discussion on rheumatism, Dr. C. Preston Ball of Dublin dealt with the relationship of oral sepsis to rheumatic diseases. Dr. Cary Coombes of Bristol thought that rheumatism was less frequent than twenty years ago and that there was strong evidence in favor of a causal streptococcus, which might be a normal inhabitant of the intestine converted from a saprophytic to a pathogenic type. Dr. M. W. Ray of London attached importance to a diathesis and did not think that the result of tonsil enucleation was conclusive.

At a joint meeting of the State Medicine and Pathology sections, Dr. J. G. Adami, vice-chancellor of the University of Liverpool, opened a discussion on cancer. He believed that from now onwards medical research would concern itself chiefly with the provision of better and surer methods of arresting cancerous growths. There were many causes of cancer and the more hopeful line of attack appeared to be how to end cancer rather than to find out how it began. He did not believe that the campaign against cancer which had been so successful against cancer in America would lead to "cancerphobia." The same warning had been thrown out when the campaign against tuberculosis had been started, and had proved ill-founded. He advised every medical man who detected in patients what he deemed to be symptoms of cancer not to send them away with comforting words but to see them again and to keep in touch with them, so that surgery, if needed, might be employed in that early stage of the disease when there was the best chance of success.

Commander O. Locker Lampson, M.P., speaking as a layman, made a stirring plea for a braver outlook. After three years in Russia, where death was disregarded, it was astonishing to return to this country and to find all this fear of death. After all, it was better to die from cancer at 52 than from tuberculosis at 22. By getting rid of this fear we should get early operations with a large majority of cures. Recent discoveries indicated remarkable progress. We must, therefore, with hopeful confidence, provide adequate support for research work.

DEATH OF SIR JAMES CANTLIE

Sir James Cantlie, founder of the R. A. M. C. and a well known authority on tropical medicine, died on May 28 in a London nursing home. Born at Dufftown, Banffshire, in 1851, the son of a farmer, he began his education at the Milne Institute, Morayshire, and received his surgical training at Charing Cross Hospital. He graduated at Aberdeen University as M.D. He received the K.B.E. in 1918, was a Knight of Grace of St. John of Jerusalem, and wore the Turkish Osmanieh of the fourth class. In 1866 he became a D.P.H. and an F.R.C.S. in 1877, and he was made surgeon of Charing Cross Hospital in 1887. He had a long, dynamic and varied experience of the British overseas dominions and dependencies. Attached to the Cholera Commission in Egypt in 1883, he practised in Hong Kong, where he founded the Chinese College of Medicine, now merged in the Hong Kong University. In the course of travel through China, Japan, Korea, Eastern Siberia, India, Canada and the United States, he made a study of their medical schools, and on his return to Great Britain inaugurated a campaign in favor of the investigation of tropical medicine. He founded the *Journal of Tropical Medicine and Hygiene*, of which he was made treasurer.

Sir James Cantlie also held a large number of public appointments, including those of plague officer to the London County Council and Hon. Secretary of the Royal Institute of Public Health. At a meeting at the Guildhall, London, about 40 years ago, after watching the casual way in which stretcher drill was done, he lectured his students on the subject, and by interesting Earl Wolseley, then com-

mandar-in-chief, set the scheme going for the formation of those corps which eventually became the Royal Army Medical Corps. He was first commandant of the Volunteer Medical Staff Corps. He was a prolific writer on medical subjects and a zealous advocate of physical training. He was refreshingly original in his methods of exposition and examination, and, finding the stethoscope unequal to testing certain forms of congestion, he used a tuning fork, with results that, he claimed, were corroborated by the X-ray afterwards.

One of Sir James Cantlie's most sensational appearances before the public occurred in 1896 when he took a hand in international politics to some purpose. Dr. Sun Yat Sen, the Chinese "reformer," who had been one of Cantlie's medical pupils in the east, came to this country on a propagandist mission, and, on being inveigled into the Chinese legation in Portland Place, found himself a close prisoner. The Chinese government was known to have put a price on his head, and the inference was that he was to be clandestinely deported as a political offender. After several days' imprisonment he contrived to send a message to Sir James Cantlie, who appealed to the Foreign Office, and an order from the late Marquis of Salisbury frustrated the plot by obtaining the prisoner's release.

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING JULY 19, 1926

Diphtheria	11	German measles	4
Last week	13	Mumps	2
Typhoid fever	7	Pneumonia, lobar	8
Last week	15	Septic sore throat	1
Scarlet fever	39	Tetanus	2
Last week	35	Tuberculosis, pulmo-	
Whooping cough	23	nary	30
Last week	76	Tuberculosis, other	6
Measles	148	forms	44
Last week	8	Gonorrhea	43
Bronchopneumonia	29	Syphilis	
Chickenpox			

MORBIDITY REPORT FOR THE WEEK ENDING JULY 24, 1926

Diphtheria	9	Bronchopneumonia	7
Last week	11	Chickenpox	18
Diphtheria bacilli carriers	3	Dysentery, bacillary	1
Whooping cough	45	Mumps	2
Last week	35	Pneumonia, lobar	12
Scarlet fever	21	Tuberculosis, pulmo-	
Last week	18	nary	35
Measles	48	Tuberculosis, other	
Last week	76	forms	1
Typhoid fever	2	Gonorrhea	11
Last week	7	Syphilis	7

NEWS ITEMS

ELECTION OF DR. A. S. BEGG TO THE NATIONAL BOARD OF MEDICAL EXAMINERS—Dr. Alexander S. Begg, Dean of Boston University School of Medicine, has been elected by the executive committee into membership in the National Board of Medical Examiners.

COOLIDGE AWARDED MEDAL BY FRANKLIN INSTITUTE—Dr. W. D. Coolidge, assistant director of the research laboratory of the General Electric Company and inventor of an X-ray tube which bears his name and which is universally used in hospitals and laboratories, has been awarded the Howard N.

Potts gold medal for 1926 by the Franklin Institute of Philadelphia.

The medal, to be formally presented by the institute on October 20, is "in consideration of the originality and ingenuity shown in the development of a vacuum tube that has simplified and revolutionized the production of X-rays," according to the institute's citation.

In accepting the medal, Dr. Coolidge will present a paper on his new and powerful cathode ray tube.

REMOVAL—Dr. M. M. Jordan has removed his office to the Medical Arts Building, 36 Pleasant Street, Room 993, Worcester, Mass.

REMOVAL—Dr. William F. Holzer announces the removal of his office from 28 Pleasant Street to Suite 802, Medical Arts Building, 36 Pleasant Street, Worcester, Mass.

REMOVAL—Dr. James J. Regan has removed his office to 520 Commonwealth Avenue, at Kenmore Station, Boston.

SUSPENSION OF THE REGISTRATIONS OF DR. JOSEPH A. LAURION AND DR. ALFRED LEGER—The Board of Registration in Medicine voted on July 1, 1926, to suspend the registration of Dr. Joseph A. Laurion, 639 Merrimack Street, Lowell, until further action, and also voted to revoke the registration and cancel the certificate of Dr. Alfred Leger of 540 Massachusetts Avenue, Boston, Mass.

ELECTION OF OFFICERS OF THE NEW ENGLAND ROENTGEN RAY SOCIETY—President, Dr. P. H. Cook of Worcester; Vice-President, Dr. C. H. Jennings of Fitchburg; Secretary-Treasurer, Dr. M. C. Sosman of Boston, Peter Bent Brigham Hospital; member of Executive Committee, Dr. Fred Eveleth of Concord, N. H.

DR. HUGH CABOT—Dr. Hugh Cabot, according to the *London Times*, has taken charge for a fortnight of the teaching of surgery in Sir Holburt Warren's clinic at St. Bartholomew's Hospital and Medical College, and has been admitted to a meeting of the council as an honorary perpetual student of the College. This honor has been conferred only once before, when Professor Harvey Cushing had charge of the teaching of surgery in Professor Gask's clinic in 1922.

DR. HAMILTON HONORED—At the commencement exercises of Mt. Holyoke College, Dr. Alice Hamilton, associate professor of industrial medicine at the Harvard Medical School, received the degree of Doctor of Science.

LOWELL GENERAL HOSPITAL RECEIVES BEQUEST—The Lowell General Hospital has recently come into the possession of a large bequest, amounting to over \$700,000, from the estate of Freeman B. Shedd, late of Lowell.

The will was made about a dozen years ago, and left a large trust fund, the income of which was for the use of Mr. Shedd's wife and daughter while they lived. The hospital was made the principal residuary legatee.

The daughter died several years ago and more recently the widow has passed away, and the fund is now in the hands of the hospital trustees.

One clause of the will stipulates that a building for incurable cases is to be erected, at a cost of not less than \$100,000.

As the Lowell General Hospital is already possessed of a thoroughly equipped general outfit, with over 150 beds, the new endowment will serve to put them still further ahead in the field of useful service to the community.

A JOURNAL DEVOTED TO CANCER—The British Empire Cancer Campaign has begun the publication of a new journal under the title *Cancer Review*. The object is to increase co-operation between clinicians and scientists who are engaged in any form of cancer research.

It will consist of abstracts and reviews of the current literature dealing with cancer.

NOTICE

UNITED STATES CIVIL SERVICE EXAMINATION

The United States Civil Service Commission announces the following open competitive examination:

- Occupational Therapy Aide (Arts and Crafts)
- Occupational Therapy Aide (Trades and Industrial)
- Occupational Therapy Aide (Agriculture)
- Occupational Therapy Pupil Aide (Arts and Crafts)

Applications for these positions will be rated as received at Washington, D. C., until December 30. The examinations are to fill vacancies in the Veterans' Bureau throughout the United States, and in positions requiring similar qualifications.

The salary range for the position of occupational therapy aide is from \$1680 to \$2040 a year, and for the position of occupational therapy pupil aide, from \$1140 to \$1500 a year. The entrance salary within the range stated will depend upon the qualifications of the appointee as shown in the examination and the duty to which assigned. Promotion may be made to higher grades in accordance with the civil service rules as vacancies occur.

The duties of occupational therapy aides will consist of giving instruction in the arts and crafts, trades and industrial subjects, or agriculture; keeping a daily record of the work and progress of each and every patient coming under direction and instruction; and making the required reports of the activities of the reconstruction work in occupational therapy.

The duties of occupational therapy pupil aides will be to perform the work outlined above, under the supervision and instruction of the chief aide.

Competitors will be rated on their physical ability, and education, training and experience.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the Board of United States Civil Service Examiners at the postoffice or custom house in any city.

REPORTS AND NOTICES OF MEETINGS

MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH

THE Massachusetts Association of Boards of Health held its quarterly meeting at Salem Wilfords on July 22, 1926. After a shore dinner and a short business meeting addresses were delivered by Dr. Percy R. Howe of the Forsyth Dental Infirmary on Experimental Effects of Certain Diets, and Dr. Richard M. Smith on The Health Needs of the Pre-School Child.

Dr. Howe described the experimental work that has been done on animals at the Forsyth Dental Infirmary, with special reference to dental and bony structures. The anti-scorbutic vitamin with ample mineral intake and a rel-

atively low protein diet seems to be most favorable for tooth and bone formation. The need for sufficient roughage was also stressed.

Dr. Smith classified the needs of the child in the pre-school stage, after the years of infancy.

BOOKS RECEIVED FOR REVIEW

- The Medical Department of the United States Army in the World War. Vol. VIII—Field Operations. War Department: 1925. 1097 pages. Price, \$3.*
- Gastric Function in Health and Disease. By John A. Ryle. New York: Oxford University Press. 152 pages. Price, \$2.75.*
- Disease Prevention. By Herbert H. Waite. New York: Thomas Y. Crowell Co. 667 pages. Price, \$4.50.*
- Sixty Years in Medical Harness. By Charles Ben-eulyn Johnson. New York: Medical Life Press. 333 pages. Price, \$3.*
- Visual Field Studies. By Ralph I. Lloyd. New York: The Technical Press. 216 pages. Price, \$6.*
- Betterman II—On the Business of Medicine. By Charles Elton Blanchard. Youngstown, Ohio: The Medical Success Press. 249 pages.*
- Young's Practice of Urology. Vols. I and II. By Hugh H. Young and David M. Davis. Philadelphia and London: W. B. Saunders Co. Total number of pages in the two volumes, 1484. Price per set, \$25.*
- Handbook of Diseases of the Rectum. By Louis J. Hirschman. St. Louis: C. V. Mosby Co. 403 pages. Price, \$6.50.*
- Modern Methods of Amputation. By Thomas G. Orr. St. Louis: C. V. Mosby Co. 117 pages. Price, \$3.50.*
- A Classification of the Tumors of the Glioma Group on a Histogenetic Basis with a Correlated Study of Prognosis. By Percival Bailey and Harvey Cushing. Philadelphia, London and Montreal: J. B. Lippincott Co. 175 pages.*
- The Surgical Clinics of North America. Philadelphia number. February, 1926. Vol. VI, No. 1. 325 pages. Prices per clinic year: Paper, \$12; cloth, \$16.*
- A Manual of Hygiene and Sanitation. By Seneca Egbert. Philadelphia and New York: Lea & Febiger. 616 pages. Price, \$4.*
- Neuritis and Neuralgia. By Wilfred Harris. Oxford Medical Publications. 418 pages. Price, \$4.*
- An Introduction to the Study of X-Rays and Radium. By Hector A. Colwell and Cecil P. G. Wakeley. Oxford Medical Publications. 203 pages. Price, \$3.35.*
- The Private Practitioner as a Pioneer in Preventive Medicine. By Sir George Newman. Oxford Medical Publications. 47 pages. Price, 30 cents.*
- The Diagnosis, Treatment and End Results of Tuberculous Disease of the Hip Joint. By George Perkins. Oxford Medical Publications. 118 pages. Price, \$1.75.*
- Diseases of the New-Born—A Monographic Handbook. By John A. Foote. Philadelphia, London and Montreal: J. B. Lippincott Co. 231 pages. Price, \$5.*
- The Proceedings of the Charaka Club. Vol. VI. New York: Paul B. Hoeber. 145 pages. Price, \$4.*
- Nervous and Mental Disorders from Birth through Adolescence. By B. Sachs and Louis Hausman. New York: Paul B. Hoeber, Inc. 861 pages. Price, \$10.*
- Mortality Statistics—1923. Twenty-fourth Annual Report. Washington: Government Printing Office. 485 pages. Price, \$1.50.*
- Thomas Sydenham, Clinician. By David Riseman. New York: Paul B. Hoeber, Inc. 52 pages. Price, \$1.50.*

Oster's Modern Medicine. Re-edited by McCrae. Vol. III. Philadelphia and New York: Lea & Febiger. 1052 pages. Price, \$9.

Emergency Surgery—The Military Surgery of the World War Adapted to Civil Life. By George de Tarnowsky. Philadelphia and New York: Lea & Febiger. 718 pages. Price, \$7.50.

Biological Monographs and Manuals. No. VI—The Comparative Anatomy, Histology, and Development of the Pituitary Body. By G. R. de Beer. Edinburgh and London: Oliver & Boyd. 108 pages. Price, 12/6 net.

Collected Papers by the Staff of the Henry Ford Hospital. (First series, 1915-1925.) New York City: Paul B. Hoeber, Inc. 634 pages. Price, \$8.

Blood Chemistry—Colorimetric Methods. By Willard J. Stone. New York: Paul B. Hoeber, Inc. 129 pages. Price, \$3.25.

Diathermy with Special Reference to Pneumonia. By Harry Eaton Stewart. New York: Paul B. Hoeber, Inc. 228 pages. Price, \$3.

The Clinical Interpretation of the Wassermann Reaction. By Robert A. Kilduffe. Philadelphia and New York: Lea & Febiger. 203 pages. Price, \$2.50.

The Surgical Clinics of North America. April, 1926. Vol. 6, No. 2. San Francisco Number. Philadelphia and London: W. B. Saunders Co. 577 pages. Price per clinic year: Paper, \$12; cloth, \$16.

The International Medical Annual—1926. New York: William Wood & Co. 555 pages. Price, \$6.

A Bipolar Theory of Living Processes. George W. Crile. New York: The Macmillan Co. 405 pages.

The Principles of Anatomic Illustration before Vesalius. By Fielding H. Garrison. New York City. Paul B. Hoeber, Inc. 58 pages. Price, \$2.50.

Experimental Pharmacology as a Basis for Therapeutics. By Hans H. Meyer and R. Gottlieb. Philadelphia, London and Montreal: J. B. Lippincott Co. 656 pages.

Modern Methods of Feeding in Infancy and Childhood. By Donald Patterson and J. Forest Smith. New York: Paul B. Hoeber, Inc. 106 pages. Price, \$3.

Modern Views on Digestive and Gastric Disease. By Hugh MacLean. Paul B. Hoeber, Inc. New York: 170 pages. Price, \$4.

Studies from the Rockefeller Institute for Medical Research. Vol. LVI. New York: Rockefeller Institute for Medical Research, 1926. 630 pages. Price, \$2.

I Believe in God and in Evolution. Fourth edition. William W. Keen. Philadelphia and London: J. B. Lippincott. 109 pages. Price, \$1.25.

Nursing Guide. By Louis W. Sauer. St. Louis: C. V. Mosby Co. 296 pages. Price, \$2.

A Manual of Normal Physical Signs. By Wyndham B. Blanton. St. Louis: C. V. Mosby Co. 215 pages. Price, \$2.50.

The Thyroid Gland. By Charles H. Mayo and Henry W. Plummer. St. Louis: C. V. Mosby Co. \$3 pages. Price, \$1.75.

Diseases of the Skin. By Richard L. Sutton. St. Louis: C. V. Mosby Co. 1303 pages. Price, \$12.

Materia Medica. By Lavina L. Dock, R.N. New York: G. P. Putnam's Son. 317 pages. Price, \$2.25.

Parenthood and the Newer Psychology. By Frank Howard Richardson, A.B., M.D. New York: G. P. Putnam's Son. 200 pages. Price, \$1.75.

Principles of Human Physiology. By Ernest H. Starling. Philadelphia: Lea & Febiger. 1074 pages. Price, \$8.50.

Text Book of Urology. By Oswald Swinney Lowsley and Thomas Joseph Kirwin. Philadelphia: Lea & Febiger. 699 pages. Price, \$10.

The White Spots of Epilepsy and Other Phases of the Disease. By Edward A. Tracy. Boston: Richard T. Howard. 129 pages.

Collected Papers of the Mayo Clinic and the Mayo Foundation. Vol. XVII—1926. Philadelphia and London: W. B. Saunders Co. 1078 pages. Cloth, \$13 net.

General Index to Abt's Pediatrics. Vols. 1-8. Philadelphia and London: W. B. Saunders Co. 249 pages.

Abt's Pediatrics. Vol. 8. Philadelphia and London: W. B. Saunders Co. 1102 pages. Price, \$10 per volume.

BOOK REVIEWS

The Finer Diagnoses of Acute Brain Involvements, Inclusive of Syphilis and Brain Injury. By J. VICTOR HABERMAN. 116 pp. 8^o. Paper covers. Medical Journal and Record, New York, n.d.

This short monograph covers the diseases of the brain and brain injury from the pathological point of view. Many references are given to the literature, and although the subject matter is not new, nor the method of presentation unusual, the book has some value on account of grouping the material together in a concise form.

The White Spots of Epilepsy, and Other Phases of the Disease. By EDWARD A. TRACY. 129 pp. 8^o. Richard T. Howard, Boston, 1926.

The book consists of a reprinting, with slight enlargement, of a number of papers published by the author in various medical journals in the last few years. The author is the Senior Physician in the Boston Public Schools and has charge of the clinic for nervous and epileptic children at the Forsyth Dental Infirmary. He apparently noticed, about 1916, that many cases of epilepsy had vaso-motor changes, noticeably in the skin of the arms and face. He has since called attention to this reaction and especially the white spots on the skin which are found frequently in these cases. His book is illustrated by numerous photographs showing these findings. His observations are of interest because they tend to make more certain the assumption that epilepsy is really a vaso-motor disease and that the attacks are due to cerebral vaso-motor spasm. The author, however, apparently feels certain that an early diagnosis, before the epileptic fits have taken place, can be made by observation of these vaso-motor changes in the extremities. It would seem that he has probably gone too far with his hobby, after making observations of considerable interest, and has tried to generalize his facts to make them fit all cases. He believed that in epilepsy a sympathetic hypertonia leads to chronic vaso-constriction spots and that treatment, therefore, should be by the sympathetic paralyzing, oenanthic crocata. Case histories are cited, but in insufficient numbers to be convincing. The drug is administered, by mouth, in a colloid solution. Much more investigative work is necessary before the soundness of the author's work can be accepted.